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Original Communications.

THE TREATMENT OF CARCINOMA OF THE LOWER LIP.

BY JOHN CHALMERS DA COSTA, M.D.,
Professor of Principles of Surgery and of Clinical Surgery, Jefferson Medical College.

Cancer of the lower lip is a very common growth, whereas, as is well known and seems peculiar, primary cancer of the upper lip is rarely met with. Cancer of the lower lip occasionally takes origin from the mucous surface, but most frequently from or near the line of junction of the skin and mucous membrane. It may arise from about the middle of the upper border of the lip, but more usually starts somewhere between the middle and either angle. Only in rare cases does it begin at the angle, although the angle frequently and the upper lip occasionally become involved, as the growth advances.

The disease is far more common among men than among women; the proportion, according to König, being 20 to 1. It is particularly common in men whose work forces them to be exposed to all the inclemencies of the weather; for instance, fishermen, street workmen, teamsters, farmers, motormen, and sailors. It is generally agreed that smoking is often an exciting cause.

Some maintain that tobacco is causative by directly exciting and maintaining irritation, but it is noteworthy that cigar smokers do not suffer so frequently as pipe smokers, particularly the smokers of short-stemmed clay pipes. The short stem of a clay pipe grows hot when the lighted pipe is energetically pulled upon. It becomes dry and tends to adhere to the lip, and when it is removed a portion of the protective epithelium is pulled off and the lip is made sore. Most habitual smokers invariably hold the pipe in the same place, and hence the epithelium of one region may be abraded scores and hundreds of times, until the area becomes chronically irritated and finally cancerous. In this country most men smoke, very many workmen smoke clay pipes, and outdoor workmen often smoke while they work. A man who smokes while he performs manual labor holds the pipe in his mouth for considerable periods without removing it, and when he does remove it, it is liable to be adherent. The frequency of cancer among men, and particularly among outdoor workers, may thus be partially explained, the irritation, be it observed, being due to the hot stem rather than to the tobacco.

It has often been asserted that tobacco itself is really a cause, the assertion being largely founded upon the fact that cancer of the lip is so rare among females in countries in which it is not customary for women to smoke. It is stated, however, that cancer of the lip is no more common among females in countries in which women do smoke. It has been alleged that the disease was common even before the discovery of America — in other words, was common in Europe before Europeans had begun to smoke. Those who believe that tobacco is a cause point to the alleged fact that cancer of the lip is more common among the female peasants in Ireland than among a like class in England, and give as a reason that the Irish peasant women often smoke. Warren saw four cases in women, and three of these patients were smokers. It is probable that tobacco as an irritant to the mucous membrane has often some influence in producing disease, but the intensity of the influence depends largely upon the way in which the tobacco is used.

Another assigned cause for the frequency of the condition in males is careless shaving, but we should note that cancer of the lip is frequently seen in those with beards. Occasionally a cancer arises from a papilloma, an area of eczema, a spot of herpes, the margin of a scar, and not infrequently from a neglected irritation, ulcer, or fissure. The fact that this latter mode of origin is not infrequently noted should make us very careful in managing a chronic ulcer or fissure of the lip. The ordinary small ulcer or fissure will usually heal after the application of simple remedies; if it does not, it should be touched with nitrate of silver; and if this application fails to cure, it should be excised, the wound being sutured carefully and the excised tissue being examined microscopically in order to determine whether or not cancer has begun.

An ulcer or a fissure with a hard edge should always excite anxiety, and ought always to be excised, if not due to syphilis.

Cancer of the lip is uncommon before the age of forty, although it is occasionally met with during the thirties. It is most common between the ages of fifty and sixty. Although the disease is rare in people under forty years of age, when it does appear in a younger person it is always more malignant than is the disease in an older person. As a rule, the older the individual, the less malignant is the growth; the younger the victim, the more malignant is the growth.

A carcinoma of the lip in an individual over forty is ordinarily, as Broca shows, more malignant than a cancer of the skin, and less malignant than a cancer of the tongue. We may add to this the observation that the growths of least malignancy start at the skin margin, and the growths of greatest malignancy are apt to arise distinctly from the epithelial surface. The further inward on the epithelial surface the growth begins, the more malignant it is, as a rule.

The cancer may first appear as a fissure with hard edges, which declines to heal; as a slowly developing ulcer with hard edges, which refuses to cicatrize; as a hard papule in the mucous membrane, which does not ulcerate for a considerable time; or as an eczematous-looking surface, which weeps and crusts, and is covered with papillomatous projections. The first three forms spread deeply under the epithelium and involve the muscle of the lip comparatively early; the last mentioned form is superficial and does not involve the muscle until late. The first three forms are more malignant than the last form, although the papule may remain inactive or latent for a considerable length of time. The sooner the muscle of the lip is involved, the more malignant is the growth. Whenever there is involvement of muscle, there is rapid dissemination of cancer cells,

the dispersal being brought about by muscular contractions. It is the more rapid involvement of the muscle which makes cancer of the tongue so much more malignant than cancer of the lip (Cheyne), and which makes cancer of the mucous surface more malignant than cancer of the skin edge; and it is the late involvement or the total absence of involvement of the muscle in cancer of the skin of the face that makes this growth so much more benign than cancer of the lip or tongue (W. Watson Cheyne).

In whatever form cancer starts, even if it is not ulcerated from the beginning, it sooner or later ulcerates, and the characteristic epitheliomatous ulcer forms. In its earliest stages this ulcer is apt to be concealed by a crust; and if the crust is picked off, the raw surface is exposed. Patients have a habit of picking at this crust, and constantly irritating the area of malignant disease. The typical epitheliomatous ulcer has raised, indurated, everted, and uneven edges, and the base is hard, irregular, and sloughy. When such an ulcer is squeezed, it is often possible to express from it worm-like masses of atheromatous material. The discharge of an epitheliomatous ulcer is thin, reddish sero-pus, which is irritating to the surrounding healthy skin and mucous membrane. The discharge is what is known as sanious pus, and very frequently it is also putrid—what is called ichorous pus. In many cases the floor of the epitheliomatous ulcer is on a much lower level than that of the adjacent healthy skin; but in some cases in which growth exceeds destruction, great epitheliomatous masses form, which elevate the raw surface above the level of the surrounding skin.

The application of caustics to an epitheliomatous ulcer usually causes it to spread with great rapidity. Carcinoma of the lip spreads laterally and also toward the muscle of the lip. A line of induration advances, and ulceration follows induration. This line of induration is under the mucous membrane. In advanced cases the ulcer destroys the entire lip, and involves the floor of the mouth, the lower jaw, and the neck. When the lip is destroyed, the saliva is not retained, and it constantly dribbles down the chin, mixed with the putrid discharges of the ulcer, causing inflammation of the skin over which it flows.

The anatomically related lymph glands are quickly involved, in cancer of the lip. The rapidity of the involvement varies with the malignancy of the case, but certainly in many cases the glands are involved ten or twelve weeks after the beginning of the growth. At first they enlarge slowly, so that they are involved long before they have enlarged sufficiently to be palpated. The mere fact that enlarged glands cannot be detected by palpation is not a proof that glandular disease is absent. When the glands have once enlarged appreciably, they continue to enlarge very rapidly. Adjacent structures are infiltrated, the skin becomes purple and thin and finally ulcerates, the patient suffers great pain, and hemorrhage—even fatal hemorrhage—is liable to occur.

In attempting to estimate whether the glands are enlarged or not, unless the enlargement is gross and obvious the surgeon should feel for it by placing one finger within the mouth and making counter-pressure with the fingers of the other hand beneath the jaw. A curious fact about carcinoma of the lip is that even when there is extensive glandular involvement, metastasis to distant parts is unusual.

The duration of cancer of the lip, if unoperated upon, has been variously estimated. König estimates it at from one to four years; the elder Senn, at from three to five years. The average duration is probably about three years. In forming an estimate of the probable duration of the cases, we must note the patient's age, remembering that the most malignant form occurs in the young; we must observe the nature of the growth, remembering that some cases grow more rapidly and are more malignant than others; and we must note the situation of the growth, remembering that the more it is to the interior of the mouth, the more malignant it is.

Cancer of the lip, if it produces death, does so either by bronchopneumonia, due to the inhalation of septic material; exhaustion; or hemorrhage; and very rarely from metastasis. The number cured by a thorough and radical operation is variously estimated at from forty to sixty per cent, taking the three-year limit as a just one, and considering patients as cured who have gone three years after an operation without recurrence. In fact, eighty per cent of all recurrences take place within the first year after operation.

When the tumor is removed before there is obvious glandular enlargement, the prognosis is excellent; when there is slight glandular involvement, it is fair; but when there is extensive glandular involvement, it is well-nigh hopeless.

In making a diagnosis of cancer of the lip,

we must exclude simple ulcer, tubercular ulcer, syphilitic conditions, and actinomycosis. It is often impossible to make a diagnosis between a simple ulcer which refuses to heal, and the earliest stage of a carcinoma. In a doubtful case, as before stated, it is our duty to extirpate a suspicious sore about the lip, and then obtain an accurate diagnosis by the use of the microscope. Tuberculosis may attack the lip, either as lupus or as the ordinary tubercular ulcer. Lupus in nowise resembles carcinoma, and occurs especially in the young; and tubercular ulcer occurs particularly in the young, has thin and undermined edges which are not indurated, a floor covered with edematous granulations, and edges which are usually surrounded by a zone of purplish discoloration. Carcinoma, it will be remembered, contains no real granulations.

The lesion of secondary syphilis cannot be mistaken for cancer. Lesions of the lip occurring during secondary syphilis are secondary to lesions of the cheeks, are associated with other and obvious syphilitic phenomena, and are cured by antisyphilitic treatment. Tertiary lesions of the lip may cause a general thickening of an extensive area of the lip, which in nowise resembles carcinoma; or may cause the formation of a gumma, which is different in every particular from cancerous disease. A chancre of the lip may be confused with an epithelioma, and it is necessary always to bear in mind the possibility of the confusion. The initial lesion is more common in the female, whereas carcinoma of the lip is infinitely more common in the male sex. The initial lesion is particularly prone to appear on the upper lip, whereas carcinoma of the upper lip is very rare, the disease being far more usual on the lower lip. The initial lesion can appear in a person of any age, whereas the carcinoma is not frequently met with before the age of forty. The ulcer of carcinoma is irregular, with hard, everted edges and a foul and sloughy base. The ulcer of the initial lesion is small and regular, the hard edges are distinctly circumscribed from the surrounding tissues, and the ulcer is usually smooth and glazed. Whereas it occasionally happens in carcinoma that induration precedes ulceration for a considerable period, this is almost the invariable rule in the initial lesion. Commonly in carcinoma ulceration comes first, and then comes induration; commonly in the initial lesion induration comes first, and then comes ulceration. An initial lesion develops much more rapidly than does a malignant growth—the glands beneath the jaw are implicated almost as soon as the initial lesion begins; but in carcinoma the glands are not *obviously* implicated for a number of months. Then, again, the initial lesion will be followed by distinct secondary symptoms and the condition will pass away during the administration of mercury.

TREATMENT.

The only proper treatment for cancer of the lip is radical extirpation at the earliest possible moment, associated with removal of the anatomically related lymphatic glands. It is quite true that arsenic is frequently used in these cases. We admit that some cases have been cured by its use, but we consider that this treatment is absolutely improper, because it entirely neglects the associated lymphatic glands. Whereas some cases have recovered after the local application of arsenic, a very large number of cases must have perished because the adjacent glands were not removed. The treatment is more painful, produces greater disfigurement, is just as dangerous, and is of infinitely less value than is operation by the knife.

In every operation the surgeon must aim at radical removal, and in the majority of cases it is perfectly useless to take away the lip and leave the anatomically related glands. A surgeon would not think of taking away a cancer of the breast without removing the axillary glands; yet it is not uncommon, even at the present day, for a cancer of the lip to be removed, and the submental and submaxillary glands to be left untouched. Dowd points out that there are two possible reasons for this negligent surgery: (1) Many cases are known to have gotten well after simple excision of the growth, without removal of the glands; and (2) there is a general faith that diseased glands are always appreciable by palpation. But, as Dowd well says, although many patients from whom the lymph nodes are not removed do recover, many others die because they are not removed; and he quotes Fricke's statements to prove that lymphatic involvement is often present when the primary growth is no larger than a hazelnut. In one of the reported cases the involvement of the glands existed when the ulcer on the lip was only six weeks old. In fact, the surgeon should assume that the glands are diseased in every case, for they are infected early and long before they can be palpated;

hence, in every case of operation he must not be content with simply removing the growth, but must remove at least the submental and submaxillary lymph glands. Some surgeons advocate making an exploratory incision to see whether the glands are enlarged, but I have demonstrated in several cases that though no enlarged glands could be palpated after making an incision beneath the jaw, yet when the areolar tissue and glandular structures from beneath the jaw were removed, microscopic examination showed that they were involved. It is safer in all cases to remove the glands and fat whether they seem to be enlarged or not, just as we remove the glands and fat from the axilla in every case of cancer of the breast, even if the enlargement is not obvious before opening the axilla, and even if it is not detected after the axilla has been opened.

The growth on the lip must be completely removed. In order to accomplish this satisfactorily, the incision must go at least one-fourth of an inch wide of detectable induration.

The lip can be removed by a V-shaped incision, by a quadrilateral incision, or by a semilunar cut; and the incision must be prolonged below the chin, or else separate incisions must be made below the chin. In a growth which is simply on the margin of the lip, which is superficial, and which spreads laterally, the upper border of the lip may be removed by a semilunar incision, the mucous membrane being sutured subsequently to the skin. As Senn says, "the lip which remains is long enough to retain the secretions, and a new prolabium forms."

Frequently this operation can be performed under local anesthesia, the glands being extirpated a week or two later. In a small and recent growth on the margin of the lip he old V-shaped incision may be used. It is not suitable if the growth is extensive, because when a large portion of the lip has been removed by a V-shaped incision, the resulting lip is so small as to greatly lessen the size of the mouth, pucker the upper lip, and interfere with talking and eating.

If the triangular incision has been employed pass the sutures of silkworm-gut, including all the tissue from the skin surface and just below the mucous membrane, but do not tie them at once. Suture the mucous membrane with catgut and tie these sutures, thus preventing tags of mucous membrane from getting between the wound edges and hindering union. After the sutures on the mucous surface have been tied, the other sutures are tightened. This operation can often be performed under local anesthesia, the glands being removed at a later operation.

If either of the above methods is selected, separate incisions must be made beneath the jaw on each side to remove the glands. This second step can be carried out at once, after the lip wound has been sutured, or, if considered advisable, may be postponed for a few days or for a week or two. It is better, if possible, to remove the primary growth and the glands at one sitting, unless the condition of the patient forbids it.

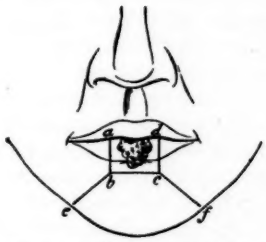

FIG. 1.—Grant's operation for carcinoma of the lip.

The operation I perform for carcinoma of the lip is that of W. W. Grant (*Medical Record*, May 27, 1899). The incisions are shown in the cut (Fig. 1), and the lower incision on each side is prolonged into the neck, in order to enable us to reach the glands. Figs. 1 and 2 show the lines of the incision

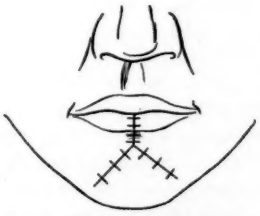

FIG. 2.—Grant's operation for carcinoma of the lip.

and the method of suturing. Dowd, in a recent article, has clearly described how to remove these glands. He says that three localities should be examined for nodules below the jaw: (1) Above the anterior part of the submaxillary salivary gland; (2) the space between the anterior bellies of the two digastric muscles; and (3) beneath the border of the jaw in the region about the posterior portion of the submaxillary salivary gland. If the submaxillary lymph glands are ob-

viously diseased, he then explores along the internal jugular vein. The rule which we follow is to clear the three first mentioned regions of fat and glands, whether enlarged glands can be palpated or not, and if we find obvious disease of the submaxillary lymph glands, to then also remove the glands from along the internal jugular vein. In carrying out the operation the mylohyoid muscle should be retracted forward, and the margins of the wound held apart laterally; as Dowd shows, the submaxillary gland will then come into view and it may be drawn down, so as to expose its anterior and upper surface, and the lymph glands above it may be extirpated. It is probably best to remove the submaxillary salivary glands because these glands contain lymphatics and are liable to be infected. By retracting the posterior portions of the wound, the glands about the border of the jaw can be removed, and by retracting the anterior portions of the wound, the glands beneath the chin can be found and extirpated. The clearing out of these triangles is absolutely essential in every properly performed operation for cancer of the lip. Unfortunately it is difficult or impossible to remove the suspected tissues in one piece without also taking away muscular structure.

Just as we regard the axilla as infected in every case of cancer of the breast, so we must regard the glands of the neck as infected in every case of cancer of the lip.

When the lip is extensively involved, it must be entirely removed; and a new lip constructed either from the cheeks, from the upper lip, or from the tissues beneath the jaw. There is sometimes trouble for a few days after the operation in holding the new lip in place. It should be sutured to the periosteum, or temporarily sutured to a part of the upper lip, which has been made raw to receive it; or the lip may be nailed to the bone, as was practiced in one case by Dr. George W. Spencer.

When the glands are extensively involved operation is hopeless—or well nigh hopeless; and when the jaw-bone and the floor of the mouth are involved with the glands, operation is absolutely useless. I have performed several very formidable operations in these cases, in attempting to save life, in two cases having removed the lower jaw and the floor of the mouth; but I have come to the conclusion that such attempts are futile.

Finally, we may thus sum up the important injunctions to be inculcated regarding the surgery of cancer of the lip: Extirpate every sore which does not heal, particularly if it has a hard edge; operate as early as possible after cancer begins; operate radically; and always remove the anatomically related lymph glands and the submaxillary glands.

THE TREATMENT OF CHRONIC SUPPURATIVE INFLAMMATION OF THE MIDDLE EAR.

By S. MacCuen Smith, M.D.,
Clinical Professor of Otology, Jefferson Medical College; Surgeon-in-Chief to Ear, Nose, and Throat Department, Germantown Hospital, Philadelphia.

In contributing a brief article on the treatment of suppurative diseases of the tympanic cavity, I will confine my remarks to a consideration of the chronic, non-operative variety. We should bear in mind the important fact that a great majority of chronic discharging ears are the direct result of neglect or inefficient treatment of the acute form. If an acute tympanic inflammation is promptly recognized and carefully treated it should not pass beyond the hyperemic or primary exudative stage. An exception to this general rule must, however, be noted in the case of an acute inflammation occurring during the course of one of the exanthemata, or complicating an attack of influenza. But even in infectious cases of this character an early and free incision of the membrana tympani allows the secretions to escape, and usually prevents the discharge from becoming chronic, by providing efficient drainage.

The diagnosis of this aural disease is usually so self-evident that but little experience is required for its prompt recognition; and yet the character of the discharge, the size and situation of the opening in the membrana tympani, the presence of pain or a rise of temperature, are all weighty factors in the general consideration and prognosis of a case of chronic otorrhea.

A discharge of a ropy, mucoid character indicates that the Eustachian tube is chiefly involved, which by the consequent swelling of its mucous lining prevents this thickened secretion from escaping into the nasopharynx. Some disease or growth in the postnasal space is usually responsible for a discharge of this character. A copious discharge, creamy in character, indicates an involvement of the mastoid cells. This should be distinguished from the less abundant yellowish pus present when the tympanic cavity alone is the site of disease. The appearance of blood in chronic cases always indicates the presence of granu-

lation tissue, which in turn is usually an outgrowth from carious bone. A discharge, not so profuse, brownish-yellow or greenish-brown in character, having a decidedly offensive odor, indicates extensive bone decay, involving frequently the tympanic attic and mastoid antrum.

Perforations may be situated in any part of the membrana tympani. They may be multiple or single. The entire membrane may be destroyed, and disintegration of the ossicles frequently follows. In uncomplicated cases the perforation is usually situated in the inferior part of the membrana tympani (membrana tensa). An opening in this situation, when of fair size, provides for ample drainage, a factor of much importance from a prognostic point of view.

A perforation situated in the upper part of the membrana tympani, especially the superior posterior quadrant (Shrapnell's membrane), is usually large in size, the ossicles and surrounding bony structures are liable to undergo necrotic changes, the deafness increases to a marked degree, and the discharge obstinately resists almost every therapeutic measure directed to its relief. In addition to this there is present a constant proneness to mastoid and brain complications, and to sinus thrombosis.

Surgical interference is necessary in most cases of this character whenever such manifestations become evident, and an operation on the middle ear, or the mastoid, or on both, should be performed in the early stages, even though the symptoms do not appear to demand such radical measures. The principal danger in such cases lies, therefore, not in the operation itself, but rather in its neglect. Many serious complications involving the mastoid process or the interior of the skull can be averted by an early operation within the cavity of the middle ear; and, likewise, many lives may be saved by a timely opening of the mastoid.

There is a class of chronic suppurative cases that should always make us apprehensive. I refer to those recurrent cases giving a history of repeated attacks of pain, and relieved only when discharge appears. It seems unfortunate that cases of this type do not suffer enough severe pain to compel them to seek relief. A continuation of these slow necrotic ravages is sure in time to produce disastrous results, even though the destructive changes are sluggish, and often free from all symptoms save the brief periodic attacks of pain.

Before instituting treatment in any given case, a thorough examination of the ear should be made, in order that a correct diagnosis may be established. It is further advisable to examine the mastoid process in all cases of chronic suppuration. Firm pressure may elicit an area of tenderness over the mastoid when no implication has been suspected. It is well to bear in mind the distinction between tenderness or swelling over the mastoid caused by a furuncle of the external auditory canal, and that resulting from a true mastoid disease. An examination of the canal should promptly establish the differential diagnosis.

After the ear has been syringed with an antiseptic solution, the canal should be carefully dried with cotton twisted on an applicator; then with reflected light and an aural speculum the external canal, membrana tympani, and middle ear cavity (when the membrane is ruptured), should be examined. Care should be taken to note the character of the discharge, the situation, size, and number of perforations, and the presence or absence of granulation tissue or polypoid growths.

Definite information should further be obtained as to the presence and extent of necrotic changes; also whether there is bulging or drooping of the superior and posterior portion of the external auditory canal, indicating involvement of the mastoid. In some cases of long standing, an absence of both membrana tympani and ossicles will be observed.

Of all measures to be employed for the treatment of a discharging ear, that of cleanliness stands first in importance. Indeed, failure to carry this simple measure into execution has been the cause of much chagrin and disappointment to both physician and patient. There seems to be a general inclination on the part of patients to become very lax in this respect, but unless its utility is fully appreciated, failure is sure to result. Where the secretions are tenacious, or have become dried and adherent to the canal or tympanic cavity, they can be readily removed by instilling, for a few minutes, some hydrogen peroxide, followed by irrigation of the canal, after which a good view of the parts can usually be obtained. With the single exception, perhaps, of hydrogen peroxide, *all* solutions should be warmed before being used in the ear.

When the perforation is situated in the inferior part of the membrane, and is of

goodly size, ample provision has been made by nature for proper drainage. If, however, the perforation is central, or even higher, it is better to enlarge the opening by a free incision down to the floor of the canal; otherwise the pus must accumulate within the tympanic cavity until it reaches the heighth of the perforation and escapes by overflow. This is very undesirable, because it is doubtful whether cases of high perforation, *per se*, can be effectually cleansed, and as pus confined in the middle-ear cavity rapidly undergoes decomposition, we would be confronted with a case of perpetual auto-infection, which would tend to preclude all possibility of recovery.

The following line of treatment will be applicable to all simple, uncomplicated cases of suppuration. The ear should first be syringed, followed by the cleaning out of all secretions from the Eustachian tube by means of Politzer's inflation of the middle ear, or by Siegle's pneumatic speculum. In cases of more or less occlusion of the tube, it sometimes becomes necessary to resort to the Eustachian catheter or bougie. In the hands of those familiar with their use these appliances are most valuable, but great caution should be observed by all others.

After the ear has been carefully dried, the head should rest on a table, with the affected ear uppermost, and a few drops of a solution of silver nitrate (gr. j to iij to the ounce) instilled into the canal. It is desirable that the solution should pass through the Eustachian tube into the nasopharynx. When the tube is quite patulous this can be accomplished by directing the patient to open and close the mouth several times, or by the act of repeated swallowing. When this simple procedure does not succeed, it can usually be accomplished by exerting slight force with Siegle's pneumatic speculum, or in the following manner: Grasp the auricle and with traction draw it outward and forward; while thus extended, take the thumb of the opposite hand and close the external auditory canal by firm but gentle pressure on the tragus, immediately relaxing the hold on the auricle. This procedure may be repeated if necessary. Of course, this method of treatment should never be entrusted to the patient.

Syringing the ear should be carried out by the patient, once, twice, or thrice daily, being guided by the character and profuseness of the discharge. The instillation of the nitrate of silver drops, or other solutions, should be repeated two or three times in each week. The frequency of both the syringing and use of drops may be gradually lessened, according to the requirements of individual cases. The chief object is cleanliness, which is best accomplished by frequent irrigation and by inflation; and yet we should not use either measure more frequently than necessity demands.

A word of caution about inflation of the middle ear may serve a good purpose. When the case is unilateral much damage can be inflicted on the good ear by the too frequent use of Politzer's method. This may, however, be overcome by directing the patient to recline his head sidewise with the good ear directed downward, and at the same time closing the external auditory canal tightly with the finger; with the head in this position inflation can easily be performed, the chief energy being directed to the ear uppermost. The nasal piece of Politzer's bag must, of course, be introduced into the nostril corresponding to the ear to be inflated. A few drops of chloroform in the bag will facilitate success in its use; moreover, the chloroform vapor exerts a beneficial influence on the mucous lining of the tube and middle ear.

So far I have mentioned the topical application of silver nitrate alone; not that all cases will improve under its use, nor that other medicaments have not their value; and yet there seems to be an almost specific action of this drug, in selected cases. The writer has often seen pain and suppuration cease after one or two applications of this drug in recent, uncomplicated cases.

Solutions of other drugs, such as copper sulphate, lead acetate, and zinc sulphate, may be used in the same strengths as the silver nitrate, but they should not be forced through the Eustachian tube. If it is necessary to employ stronger solutions, these likewise should not be allowed to flow into the Eustachian tube, but should be applied directly to the tympanic cavity by means of a cotton carrier.

Various drugs have been suggested for syringing or irrigating the ear in cases of suppuration. Boracic acid (gr. xv to f ʒ j) is suitable for young children and recent non-infectious cases. The two solutions that will give best results in the majority of cases are bichloride of mercury 1-to-3000 (in children 1-to-5000), and a solution of carbolic acid and glycerin in the proportion of three ounces of the former to one ounce of the latter; one teaspoonful of this mixture should

be added to a pint of warm water, and used with the syringe. The glycerin is added to the carbolic acid for the purpose of making it more miscible in water.

Force should never be employed while using the syringe. In children, and in cases where the tube is dilated, great care is necessary to prevent the bichloride solution from entering the throat by way of the Eustachian tube.

Cases that do not progress favorably under the above treatment should be put on what is known as the dry method of treatment, which, however, is not indicated where the perforations are small. The dry treatment consists (1) in drying the ear after syringing; (2) instillation of the drops as above described; (3) the insufflation or dusting of various powders over the surface of the middle ear; (4) the introduction of a small strip of iodoform gauze into the deep canal; and (5) a pledget of cotton placed external to the gauze to catch the discharge. The cotton can be renewed by the patient as often as required for the purpose of cleanliness.

This method of treatment, to be effective, must be carried out by the physician himself, and repeated as frequently as each individual case may require. Powders should never be packed into the ear, nor used in sufficient quantity to interfere with free drainage. Finely powdered boric acid is an efficient and popular powder; however, a combination of boric acid and iodoform in equal parts, or equal parts of boric acid and zinc oxide, will answer a better purpose in some patients.

The presence of granulation tissue, particularly if in a large quantity, calls for surgical interference; and yet there are many cases that will yield to non-operative treatment. Aside from caustics or the actual cautery, alcohol, on account of its hygroscopic properties, is the best remedy for the destruction of granulation tissue. When a case does not yield to this influence, it is usually better to remove the mass by surgical means. Alcohol dropped into the ear in full strength will cause much pain at first; it should therefore be diluted one-half with glycerin, which also has hygroscopic properties. The strength can gradually be increased as tolerance is established, until the full strength of absolute alcohol is used.

It should always be remembered that a majority of all cases of ear disease are the direct result of some abnormal condition located in the nasopharynx, the correction of which is quite as essential as treatment directed to the relief of the ear lesion. Furthermore, most patients suffering from a chronic suppurative inflammation of the middle ear require some general treatment directed to the relief of existing systemic disturbances. Benefit may also be derived from a change of scene or outdoor life.

THE VALUE OF CONTINUOUS CATHETERIZATION IN SOME GENITO-URINARY AFFECTIONS.

By H. M. Christian, M.D.,

Surgeon in Charge of the Genito-urinary Dispensary, University of Pennsylvania; Adjunct Professor Genito-urinary Diseases, Philadelphia Polyclinic.

Drainage of the bladder by means of the retained catheter, a method so highly indorsed by Guyon, has, considering its great value, received but scant recognition at the hands of the profession in this country. This lack of recognition is probably in large part due to the comparative neglect of the subject in surgical text-books; for, with the exception of White and Martin's treatise, where the method is discussed at considerable length, the recent works on genito-urinary surgery have paid but little or no attention to the subject.

That a valuable, easy, and safe method of draining the bladder was being overlooked was forcibly brought to the writer's notice by the highly successful results following its employment in a few cases lately under his care.

Case I.—Mr. K., aged seventy-two, was first seen on the morning of July 12, 1899, suffering with retention of urine of eighteen hours' duration. The retention was acute and complete, no urine whatever passing. Rectal examination revealed a uniformly enlarged prostate, soft, and about the size of a fetal head at seven months. Exciting causes of retention were constipation and a rather free use of beer. Upon taking charge of the case I was informed that several attempts had been made by a physician to introduce a catheter. These efforts had been futile, the instruments used having been filiform bougies and small-caliber metallic catheters, their only result being to cause a profuse and constant hemorrhage from the urethra. Altogether the patient was in a most distressing condition.

The anterior urethra having been washed out with a nitrate of silver solution 1:8000, an attempt was made to pass a Mercier 20-caliber. This failing to enter the bladder a bicoudé catheter was tried, but unsuccessfully, the only result from these manipulations being to increase the hemorrhage from the deep urethra. Resort was now had to the metallic prostatic catheter, with the large Beniqué curve 18-caliber. This easily passed into the bladder, but immediately became choked with blood-clots, no urine being drawn. The clots being finally removed by suction with a syringe, thirty ounces of bloody urine was withdrawn. The catheter was removed, a laxative ordered, and rest in bed enjoined, with the hope that the urine would be voided in the evening spontaneously.

Upon visiting this patient later, he was again found to be suffering from retention. An attempt to pass a soft catheter failed, and was followed by a renewal of the hemorrhage from the deep urethra, several large clots being passed. With some difficulty the metallic catheter was again introduced into the bladder, and after the clots which formed in the instrument were removed, twenty-eight ounces of bloody urine was withdrawn. I now determined to tie the catheter in, thereby securing continuous drainage. This was accordingly done, a rubber drainage-tube being slipped over the end of the instrument, conveying the urine into a large jar beneath the bed. The bladder was washed out daily through the catheter with a solution of nitrate of silver 1:4000; the urine remained bloody for three days, but the bladder never became infected.

At the end of one week it was noticed that urine was beginning to pass continuously along the outside of the catheter. The instrument was now withdrawn, a rectal examination at this time showing a marked reduction in size of the prostate gland, as compared with the condition found at the first visit. No subsequent trouble ensued, the patient voiding his urine easily about five times through the day with no residual urine.

I saw this patient some months ago, one year after the attack just described. He was then urinating six times through the day, and once at night; urine was sterile, one-half ounce residual.

Case II.—Mr. A, aged seventy-eight, had been suffering from enlargement of the prostate for ten years. There had been many attacks of retention temporary in character; he had never resorted to catheter life. When first seen January 2, 1900, he was found to be suffering in a most marked degree, with frequent desire to urinate, much pain over the hypogastric region, and intense vesical tenesmus, about half an ounce of turbid ammoniacal urine being voided every half-hour. The urine was found to contain a large amount of pus and triple phosphates.

Examination per rectum showed that the prostate was very much enlarged, and was hard and fibrous in consistency. An examination of the bladder demonstrated the absence of residual urine. The trigonum vesicæ was very tender; the length of the urethra was twelve inches.

The patient stated that his urine had been cloudy and slightly ammoniacal for several years, but that his condition was always made much more acute by catheterization for retention. The present attack followed the employment of the catheter three days prior to my visit.

The case was evidently one of acute infection of a bladder already the seat of a chronic cystitis. No local treatment was employed in this case for three days, the patient taking internally ten grains of urotropin every three hours, with rectal suppositories of opium and belladonna. At the end of three days, the vesical tenesmus having abated considerably, a Mercier catheter was easily introduced and tied in position, and retained for two weeks, the bladder being washed out daily with nitrate of silver solution.

After removal of the catheter, the patient urinated easily without pain eight times during the day and twice at night. There was three ounces of non-ammoniacal residual urine, containing a large amount of pus. Indeed, so comfortable did the patient feel that he refused to entertain the idea of either a subsequent resort to operative procedure or the regular adoption of catheter life.

Case III.—M. S., aged seventy, admitted June, 1900, to the University Hospital, suffering with enlarged prostate, atony of the bladder, with chronic retention of urine. The patient had been unable to void any urine for several months, and was being catheterized four to five times daily. There was at the time of admission an acute infection of the bladder, the urine drawn by the catheter being full of pus and ammoniacal; there was marked vesical tenesmus, which, on ac-

count of his inability to pass any urine, added greatly to his suffering. The enlargement of the prostate affected mostly the median lobe, the urethra being 11½ inches in length, the growth per rectum being about the size of the closed adult fist.

In this case a soft-rubber catheter was permanently retained in the urethra for five weeks, the bladder being washed daily with silver solution, urotropin being administered internally. After removal of the catheter, the patient was able to pass about eight ounces of urine, with four ounces residual. The prostate had diminished considerably in size, as was shown both by rectal examination and by measurement of the urethra, which at this time was only 10½ inches. On July 31, 1900, I did a Bottini operation upon him, but this was not followed by any further improvement in his condition.

At the present time (November) the patient urinates four times through the day and twice at night. The catheter is used twice daily, and there are four ounces of residual urine.

CASE IV.—J. W., aged sixty-three, was admitted to the University Hospital, service of Dr. Edward Martin, October 16, 1900, with complete retention of urine. Patient stated that he had had difficulty in urinating for two years past. He was a heavy drinker, and for three weeks prior to admission to hospital had been unable to pass urine, catheterization being constantly required, on an average of about three times a day. Rectal examination showed an enormous, apparently glandular, prostatic enlargement. The urine was alkaline, purulent, and of low specific gravity.

Before resorting to any operative measures upon the gland it was decided to employ continuous catheterization. This was carried out for two weeks. The bladder and urethra were flushed out daily with protargol solution 1:2000, the catheter being changed for a new one of soft rubber every second day. At the end of this time the catheter was removed and the patient was found to be able to urinate easily, with only one ounce of residual urine. The prostate was considerably diminished in size. At the present time (December) the patient is experiencing no difficulty in urinating.

CASE V.—P., admitted into the ward of the University Hospital June 1, 1900, with retention of urine due to the inward pressure produced by a large perineal abscess. The introduction of a catheter caused the rupture of the abscess into the urethra; the retention continued, however, daily catheterization being required. As the patient shortly developed daily rigors, with evening rise of temperature, and at the same time it being noticed that there was forming in the upper part of the scrotum on the left side a large painful swelling with slight fluctuation, I determined that the urethral opening was not sufficient to drain the original abscess. I accordingly made a counter-opening at the middle of the scrotum, evacuating about half an ounce of pus. Upon introducing a probe it was at once seen that the counter-opening communicated with the urethra, the result being a urethral fistula some two inches in length, extending from the inner side of the scrotum down to the membranous urethra.

A catheter was retained in this case for six weeks, at the end of which time the sinus leading to the urethra had entirely healed, as well as the perineal abscess. The patient was likewise voiding urine without any difficulty from three to four times daily.

CASE VI.—S. W., aged thirty, admitted to the University Hospital June, 1900, with two fistulous openings communicating with the urethra at the peno-scrotal junction. No urine reached the meatus, but it was voided entirely through the fistulas. Examination of the urethra showed a stricture of No. 20 caliber at four inches, directly in front of the inner opening of the fistula. No deeper strictures were discovered.

The patient, not being very intelligent, was unable to give a coherent history of his case, but it was ascertained that the condition followed the spontaneous rupture of an abscess, with subsequent lack of surgical attention.

In this case the fistulas were laid open down to the urethra, the stricture at four inches was cut to No. 28, and a large-caliber soft catheter introduced into the bladder and tied in position. At the end of six weeks of catheter drainage the external wound had entirely healed without any sinus, and a No. 26 sound could be passed easily.

A study of these cases shows the varying clinical conditions in which continuous catheterization will be found most beneficial.

Case I presents an instance of retention of urine complicated with severe hemorrhage in the deep urethra, a most puzzling and alarming situation, as any one must admit who has had much to do with this condition. The result in this case was most gratifying, and as far as I can say of a permanent character.

Cases II and III, while not giving such highly satisfactoy results, at the same time show the great value of this method in dealing with bladders that are the seat of either an acute or chronic infection.

In Cases V and VI the idea of making perineal drainage first entered my mind, but upon further reflection it was determined that it would be impossible to continue perineal drainage long enough to secure healing of the fistulous tracts, without incurring the risk of a perineal fistula. At any rate, the results attained seem to me to be all that could be desired.

Guyon (White and Martin) states that in retention of urine complicated by fever continuous catheterization finds its most useful application; this particularly applies to prostatic subjects. He further states that he employed the permanent catheter in fifty-six prostatics with infected bladders; in thirty-eight of these the cystitis was cured.

It is interesting to note that in Cases I, II, III, and IV, where there was present considerable enlargement of the prostate, rectal examination made after removal of the catheter showed in each case a marked diminution in the size of the gland, a result no doubt brought about by the relief of congestion, produced by the continuous drainage.

Although the number of cases cited is not large, the varied clinical conditions presented by them are sufficient, and the results obtained are satisfactory enough to warrant the writer in strongly advocating a more general adoption of this simple method of bladder drainage prior to resorting to more severe surgical procedures; especially is this urged in all cases of enlarged prostate, prior to the performance of any operation on the gland itself. Case IV illustrates the great value of this procedure in such instances, the patient appearing to have secured as much if not more relief than he could have hoped to attain from prostatectomy.

In the employment of continuous catheterization one important point in the technique must not be overlooked, and that is to see that no part of the catheter is allowed to remain in the bladder itself. The instrument should be very slowly introduced and should be retained permanently at that point at which the first urine begins to flow, the object of this maneuver being to keep the eye of the catheter in the prostatic urethra. Any portion of the instrument remaining for any length of time in the bladder is bound to provoke congestion of the trigonum, hematuria, and vesical tenesmus, conditions which will not only add considerably to the patient's suffering, but will materially add to the danger of bladder infection.

THE MANAGEMENT OF NASAL CATARRH.

By Charles Prevost Grayson, M.D.,
Lecturer on Laryngology and Rhinology, Medical Department, University of Pennsylvania.

The merely local therapeusis of both acute and chronic catarrhal rhinitis is a very simple matter. The physician needs but little special training to enable him to carry this out, if not skilfully, at least quite satisfactorily. In spite of exceptional skill upon the part of the specialist, however, he will have but slight success in the arrest of the catarrhal process in this region if he limits his treatment to merely topical methods. And this is almost equivalent to saying that catarrh is not a strictly local disease. To my own mind it is no more than a symptom of some diathetic disorder or of some persistent disturbance of nutrition. It is quite true that the employment of various cleansing, astringent, and alterative applications is of distinct value in hastening the cure of nasal catarrh, but he who ignores the real disease, of which this is but a local manifestation, will never confer more than a partial and temporary relief upon his patient.

In theorizing upon the pathogenesis of some diseases, the rôle of autotoxemia has, perhaps, been given an undeserved prominence, but in the etiology of simple rhinitis it has yet to be awarded its full share of responsibility. Believing this, I cannot review the most recent methods of treating nasal catarrh without first urging those who still fail to recognize its systemic origin to review their own experience, and to observe whether their previous successes or failures have not been largely influenced by the care or the indifference with which they have treated the economy as a whole.

Whether or not the systemic factor is to be found in a so called diathesis, or in some defective link in the chain of nutritive processes, we may be confident that the primary departure from the path of hygienic rectitude takes place in the gastrointestinal canal. In almost every case this will consist in some disturbance of the close balance that should exist between food and work, or waste and repair. In men, women, and children, in this land of plenty, the consumption of food

is usually out of all proportion to the combustion of tissue. In plain English, we all of us eat too much, and the large majority of those who suffer from catarrhs of the respiratory tract will be found indolent as regards wholesome exercise, soft, and over weight, their complexions not what they should be, and, in all probability, they are constipated.

The oxidation processes in such people are inevitably languid and incomplete, and we have the blood, therefore, tainted with a number of products of suboxidation of which uric acid is the type. The urine is invariably altered more or less both in quantity and quality. It is scanty, high-colored, of high specific gravity, and on standing at a slightly lowered temperature it deposits a bulky sediment of mixed urates or uric acid, or both. Not infrequently, also, we find in it some crystals of oxalate of lime. In a word, these people are the subjects of lithemia, and it is to this general condition, much more than to any local abnormality within the nose itself, that their chronic and their repeated attacks of acute rhinitis are due. In much the larger number of cases, therefore, catarrh is to be regarded as no more than a nasal signal of systemic poisoning.

During the colder seasons of the year, when lessened activity of the skin devolves upon the mucous membranes at times a vicarious function of elimination, we find that catarrh is most aggressive in its symptoms and most resistant to merely local treatment.

If, then, this view of the origin of the catarrhal process be adopted, the conclusion is unavoidable that we can effect its cure only by measures that will restore the digestive tract to a state of sanitary purity, and deny further admission to it of everything that will be apt to favor the renewed production and absorption of toxins.

This somewhat extended reference to the etiology of nasal catarrh will really economize space, by rendering any suggestions concerning general therapeutics quite unnecessary. A knowledge of general medicine will answer this purpose, and we may proceed at once to the local treatment of these affections.

Acute Catarrhal Rhinitis (*Coryza*).—If this disturbance were due solely to an exposure of some kind and a consequent chill, its successful treatment would be a matter easy of accomplishment. The traditional mustard foot-bath, the hot spirituous drink, and the ensuing free diaphoresis would usually arrest it and initiate a rapid convalescence; but the very fact that these measures so very seldom achieve any such result is strong evidence that we have more to deal with than a pure and simple inflammation.

Recognizing the existence of a systemic factor, therefore, and the nature of it, we will discern at once what the nature of our treatment should be. Rapid and thorough elimination will be the keystone of the therapeutic arch. The details of this may vary with each patient, but, granting the necessity for occasional modifications, we may regard as the principal features of this plan of treatment active catharsis, a greatly restricted diet, the most vigorous outdoor and indoor exercise that the patient can take, and a hot bath every night. Aside from the cathartic, internal medication should be limited to the alkalies and the salicylates.

Nothing can be more ill-judged than the routine use of the "rhinitis" and "coryza" tablets that are now having such a vogue. Instead of aiding elimination, their ingredients—opium, belladonna, aconite, etc.—greatly obstruct it, and they are enabled to afford a slight alleviation of the discomfort only at the expense of greatly prolonging the attack.

The *local treatment* will vary somewhat with the stage of the disease. During the period of acute tumefaction of the turbinates and profuse serous rhinorrhea, when there is frequent sneezing and the eyes are flooded with tears, the applications should be as soothing as possible. A few drops of a two-per-cent solution of cocaine may first be sprayed upon the engorged tissues, and, after a minute or two, be followed by one of the alkaline sprays, of which Dobell's solution is the one most widely and favorably known. This having been repeated once or twice and the nose well cleansed, we may conclude the treatment by using in an atomizer a solution of recent introduction which seems destined to become very popular. This is a combination of the extract of the suprarenal capsule with chloretone. It has the advantage of being both stable and non-toxic, and its effect combines the vascular constricting action of the suprarenal extract with the anesthetic action of the chloretone. It has the additional advantage also of being, unlike cocaine, a perfectly safe solution to place in the hands of the patient for home use. If he be instructed to first cleanse the nose and nasopharynx with the Dobell solution and then to follow

it with a spray of this adrenal-chloretone combination, he need endure very little of the discomfort that usually attends an acute coryza.

On the third or fourth day, when the mucous glands again add their secretion to the discharge and the rapid epithelial desquamation gives it a mucopurulent character, the cleansing of the nose may be succeeded by a spray of the distilled extract of hamamelis, one part to three of water. This exerts a mildly astringent action and serves to restrain the rapid loss of the superficial and glandular epithelium.

With care and favoring conditions, a day or two more will bring the attack to that point where the active hyperemia has disappeared and left in its wake a sluggish venous congestion that, if left to itself, is apt to be slow in departing. At this period a gentle stimulant of some kind may supplant the astringent, and a very excellent formula, that seems to be too little known, is "Boulton's solution." This is prepared as follows:

℞ Tr. iodin. comp., f ʒ j;
Acid. carbolic., cryst., gr. xviij;
Glycerini, f ʒ ijss;
Aq. dest., f ʒ ij.

M. Place in water-bath of 100° in tightly corked bottle until colorless. Filter.

It may be used either in spray form or by means of the cotton-tipped applicator. Under its influence the relaxed erectile tissue of the turbinates contracts, the vessel walls regain their tone, and the secretion of the mucous membrane quickly loses its viscid and purulent character.

I may refer here to the rather wide-spread use of oils in the treatment of the catarrhal affections of the nose. These petroleum products probably have very little remedial value in themselves, but it is their convenience as vehicles for other more active agents that explains their popularity. It is to be regretted, however, that their various more or less agreeable combinations with menthol, eucalyptol, thymol, and other such ingredients, have led in many instances to their being substituted altogether for the alkaline cleansing solutions. If they are used at all, it should only be in conjunction with and *after* the Dobell or other similar wash. One of the most generally useful of these oil formulæ is that of Douglas:

℞ Thymol, gr. x;
Menthol, gr. xx;
Eucalyptol, gtt. xx;
Ol. cubebæ, gtt. xl;
Benzoinol, f ʒ vj.
M.

Chronic Hypertrophic Rhinitis.—The most prominent symptom of this disease, the interference with nasal respiration occasioned by the hypertrophy of the turbinates, has led to the commonest blunder in its treatment. It is the unreasoning haste of both physician and patient to get rid of this obstructive overgrowth that leads them to ignore the prolonged catarrhal process that has been responsible for it. Cauterants and operative measures are resorted to much too early in the treatment, and the slow but conservative processes of nature are not permitted the opportunity to assist in the cure.

Immediate destruction rather than gradual resorption of the hyperplasia is too often the foremost thought in the physician's mind, and the patient's eagerness for a wide-open nose frequently induces the former to gratify this demand by sacrificing to it much of the functional value of the organ. The relief afforded by such measures must inevitably be but temporary. The creative catarrhal process is not arrested by the mere removal of one of its effects, and it will be only a question of time when, if it be allowed to continue, there will be a reappearance of the symptom to the relief of which treatment has been exclusively directed.

In the management of these cases, therefore, it will, in the long run, be much more satisfactory to make haste slowly. The patient should be made to comprehend that a pathologic process of many years' standing is not to be overcome in a few days or weeks. If, then, we are successful in establishing a mutual understanding of this kind, we may calmly hold our several destructive agents in reserve until such time as the resistance of the obstructive hyperplasia to gentler measures will justify their use.

In commencing our treatment of these cases, our efforts will first be directed to reducing the activity of the catarrhal inflammation. A careful study of the patient's general condition, and the correction of everything of a systemic nature that may serve to maintain this morbid process, will be absolutely essential. It will be time wasted to limit our study and therapeutics to the nasal chambers alone. When we have sufficiently instructed our patient concerning his general health, we may with a clear conscience devote our energies to the local condition. With the alkaline wash as an invariable preliminary, we may use after it at the first visit or two the hamamelis or the Boulton solutions. Both the superficial hyper-

emia and the hyperesthesia of the mucous membrane having been somewhat reduced by these remedies, it is prepared for something more energetic. In spite of the many substitutes that have been proposed for it, iodine is probably still the most reliable and generally useful medicament that we can employ in these advanced degrees of catarrh. The strength of the following solution may be altered to adapt it to the varying susceptibilities of different mucous membranes, but it will be found suitable for the average case:

℞ Iodin., gr. viij;
Potass. iodid., gr. xxiv;
Glycerini, f ʒ ss.
M.

It is applied by means of the cotton carrier, and until the nose has become somewhat tolerant of it, it had better be limited to the inferior meatus. It should be introduced upon the floor of the nose the full length of the fossa, and swept outward, as it is withdrawn, beneath the lower border of the turbinate. A few repetitions of this upon alternate days will effect considerable reduction of the venous engorgement of the lower turbinates, a normal circulation is reestablished, the absorption processes are stimulated, and that portion of the hyperplasia that has not as yet undergone any great degree of organization will be removed.

The strength of the solution should be gradually increased as the tissues become accustomed and less responsive to it, but when its limit of usefulness seems to have been finally reached, we may find an even more active stimulant in chromic acid. The crystal, fused upon the tip of the applicator, is the best form in which to employ this, and in order to avoid any actual destruction of tissue, it is merely lightly touched to the cocainized mucous membrane at several of the more prominent points of the turbinate. The mild inflammatory reaction occasioned by this will take up the work of absorption where it has been laid down by iodine, and further reduction of the hypertrophy will be effected.

Should cauterization become necessary to completely restore to the nasal fossæ their normal capacity, one or more slender lines may be drawn with the chromic acid upon the lower border of the enlarged turbinate for about two-thirds of its length. The fibrinous exudate that follows this application should be allowed to remain undisturbed until it spontaneously loosens and is expelled. This will usually occur in from five to eight days. It goes without saying that anything of a cauterant nature should only be used under thorough illumination of the nasal chamber.

If it should be found necessary to repeat the cauterization of a hypertrophy, at least two weeks should be allowed to elapse before doing so, and when the fossæ are at last normally roomy, treatment should not be discontinued until all traces of catarrhal action have disappeared.

Atrophic Rhinitis.—The physician will make but little headway in the relief of this notoriously obstinate disease unless he secures the active cooperation of his patient; and this is so essential because of the absolute necessity for frequent and thorough cleansing of the nasal cavities. In the early days of treatment the reappearance of the thick mucopurulent secretion, and the large crusts which result from its inspissation, follows so rapidly upon their removal that washing of the fossæ can scarcely be too frequently repeated.

The patient should be instructed how to carry this out most successfully. As long as crust formation continues, the ordinary atomizer is practically valueless as a means of removing them. The other extreme is the old-fashioned douche, the use of which, though there is no denying its efficiency, is to be deprecated because of the risk of injury to which it exposes the middle ear. An almost equally useful, and entirely safe, device is the little glass vessel known as the Bermingham douche; and, besides this, another implement that answers very well is the rubber ball syringe with its soft and flexible tip.

So large a quantity of solution must be consumed in the effort to maintain cleanliness that, if Dobell or some proprietary preparation be employed, the item of expense may become a very serious one. For these cases, therefore, the normal salt solution will prove sufficiently satisfactory, and it has the advantage of being very inexpensive. A level teaspoonful of salt to the pint of water will yield a solution of appropriate density, and the nose should be flushed with this and blown and flushed again until all secretion has been removed.

During the first week or two of his treatment, the patient's visits to the physician should be almost daily in frequency, and our effort will be to stimulate the circulation, to increase the nutrition of the anemic and atrophic mucous membrane, and, by improving the character and quantity of the

glandular secretion, to retard its inspissation. For this purpose we may make a selection from among a large number of remedies. Formaldehyde in solutions of from 1-to-5000 to 1-to-500, menthol from 5 to 20 grains to the ounce of liquid petrolatum, ichthyol in from 10- to 30-per-cent watery or oily solution, or iodine in the formula already given—any of these may be applied to the entire mucous lining of the nose by means of the cotton carrier, and they should be rubbed into it with some little friction. I repeat, however, that without perseverance on the part of the patient and painstaking thoroughness on that of the physician, very little progress can be made, but given both of these, the amount of improvement that can be obtained is often astonishing.

In conclusion, I venture to again call attention to the assistance that may be derived from everything that will improve the general vigor and nutrition of the patient. Not only his personal hygiene, but his whole environment should receive our critical attention and be made as highly favorable as possible.

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*FORMALDEHYDE.**

By A. A. Young, M.D.,
Newark, N. Y.

Formic aldehyde, an oxide of methylene, is a gaseous substance the molecular composition of which is CH_2O, or one atom of carbon and one atom of oxygen united by two atoms of hydrogen in each molecule. It is readily soluble in water, producing about a forty-per-cent solution, which borders upon saturation, and in this form it is found as an article of commerce. Upon evaporation of the solution beyond the point of saturation a rearrangement of the atoms takes place within the molecule, the composition of which now is $C_3H_6O_3$, known as paraform, a white crystalline substance which, it will be observed, forms a molecule of twelve atoms instead of four atoms, as in the case of the gaseous substance. It is a well established fact in chemistry that the rearrangement of atoms within the molecule produces an entirely different mass with entirely different characteristics and properties, notable examples of which are oxygen and ozone; or the diamond, plumbago, and charcoal. It is for this reason, I believe, without experimentation, that in this polymeric modification paraform loses in the transformation nearly all of the properties of formaldehyde, including its preservative and germicidal actions.

In this connection it will be observed that when paraform is heated in an open vessel it vaporizes, but the vapor on cooling deposits as before crystalline paraform by sublimation. When formaldehyde is heated in an open vessel, and much less heat is required, formic aldehyde, the germicidal agent, is given off vaporized, and so far as known is not redeposited as paraform; but upon the sides of the container, by slow evaporation, this polymeric modification is found deposited. This phenomenon indicates most clearly a chemical change, a change which means new properties and new characteristics; experimentation, so far as made, indicates the truth of this assumption. Paraform is therefore regarded by the writer as a by-product, a new formation, and cannot therefore be compared with formaldehyde.

They are not identical substances, though one may be formed from the other by synthesis or analysis. To convert one into the other requires a chemical change, a rearrangement of the atoms within the molecule; it means a new chemical compound having entirely different characteristics and actions. Recognizing this fact it must be apparent to all that the properties of the one cannot be substituted for the properties of the other by inference, for the indications are that error must certainly follow as the result.

It is a mistaken notion that if formaldehyde be a germicidal agent, paraform, its by-product, must be so also.

In this paper, therefore, only formic aldehyde, or its liquid solution, as found in commerce, known as formaldehyde, will be referred to.

Although formaldehyde was discovered as early as 1863, but little was known of its properties until recent years, its use being entirely confined to the microscopist, who employed it as a hardening and preserving agent. In its actions upon the tissues but few changes are observable; the tissues simply harden without material shrinking or discoloration.

In ordinary pathological specimens you will observe that the outlines in each are clear and strong, that there is no shrinking in any part, that each specimen is more firm

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*Read before the Central New York Medical Association, Oct. 16, 1900.

and hard than found in its natural state, and that the natural colors are not affected by the agent.

If, then, formaldehyde possesses such marked properties as a preservative and hardening agent, in like manner must it be, according to theory, a germicidal agent as well, and experimentation testifies to the truth of this assumption.

It has been found by experimentation that solutions as attenuated as 1 to 100,000 destroy quite readily the less resistant germs, while the more resistant ones are readily destroyed when immersed in a solution of 1 to 1000. In this connection it should be observed that in solutions of the latter strength even the *living* human skin (example, the hands) is not appreciably affected by such solution, though the hands may remain in the liquid for a considerable time.

Although formaldehyde possesses such marked hardening properties it exerts no particular influence over mucus or albumen save to render these substances aseptic, or rather antiseptic, a condition that may be advantageous in its therapeutic uses. Of its specific action but little is known, save that it is, of most organic tissues, an excellent hardening agent, and a germicide of the highest potency.

Accepting, then, the theory that most of our diseases, especially the communicable ones, are the *result* of the *action* or *growth* of specific bacteria, and that the destruction of specific bacteria, *in situ* or elsewhere, stands for *prophylaxis*, alleviation or cure of such specific disease, and for which bacteria only stand as the index, then the therapeutic use of formaldehyde, to me at least, is a suggestive one, and clinically in several directions I have experimented along this line with most favorable results, which results it is my purpose briefly to give.

The gas when liberated has the properties of diffusibility and penetrability in a marked degree, and therefore it is admirably adapted for disinfecting purposes, especially small rooms and exposed objects therein; but too great results must not be expected of it, for it will not permeate impermeable objects, and because of this failure it should not be condemned, though some writers have so condemned it. In passing, suffice it to say its penetrability, its effectiveness as a germicide, its comparative harmlessness upon objects with which it comes in contact, indicate it as worthy of an extended experimentation along therapeutic lines. Its use in this relation, as it has occurred in my practice, will now be briefly given.

(*a*) Over four years ago Mr. C. sought advice for a diseased testicle, which I believed to be malignant. Its removal was advised, and an operation performed with the use of mercuric chloride as an antiseptic. Recovery was much retarded by the formation of a fistula beginning near the upper border of the scrotum and passing upward along the track of the cord; from this fistula there was constant discharge.

This fistula was frequently cleansed with peroxide of hydrogen and followed with various other germicides, but without material improvement. A change in the method of treatment seemed desirable. I then placed upon a small probe a bit of cotton which was just nicely moistened with water; immersing this cotton into full strength formaldehyde, and removing the superfluous agent from the cotton by a couple of swings of the probe in the air, it was then inserted into and passed full length of the sinus; the smarting sensation was severe for a moment only, and the patient's language not complimentary. Suffice it to say repair began at once, and within one week there was full restoration of the parts affected.

About five months later the opposite testicle became similarly affected. For this operation formaldehyde was exclusively used in place of mercuric bichloride, and in the subsequent lavage and dressings the use of the agent was continued. Recovery was rapid without discharge or formation of a sinus. The patient is still living and healthful, with no indications of any malignant growth anywhere about the body.

(*b*) For operative procedures in case of ruptured perineum, either recent or old, formaldehyde has been used as a cleansing agent with pleasing results; it coagulates the exudates, hardens the ruptured tissues with which it comes in contact, forming a barrier against septic infection from without, and as such hardening agent it proves to be a most excellent hemostatic as well. I have used it several times, more especially in cases immediately following confinement. Such wound, rough and ragged as it might be, invariably repaired by first intention, and without septic infection, a condition doubtless brought about by the peculiar action of this agent directly upon the lacerated tissues and exudates from such laceration.

(*c*) About three years ago Mr. D. complained of pain in and about the rectum;

examination revealed an anal fistula, blind externally. The usual operation was performed and the wound curetted, after which full-strength formaldehyde was applied to the entire raw surface. The wound was well cleansed and partially closed in order to retain more fully the normal mechanical action of the sphincter ani. The external dressings were moistened with a weak solution of formaldehyde; restoration of the parts was rapid, reaching practically a perfect result.

(*d*) About three years ago Mr. V. requested treatment for bromidrosis. The case was a most severe one, and various remedies had been tried, but without material benefit. A ten-per cent solution of formaldehyde was prescribed, which checked sweating at once; and following this some ten days later there was exfoliation of the affected skin, leaving a healthful skin underneath. So far as known there has been no return of the affection.

(*e*) Various growths and pathological conditions of the skin have readily been destroyed by this agent, notably indolent ulcers, especially of the lip and face; molluscum contagiosum and allied affections, by applications of formaldehyde, have readily lost their vitality, then cleaving from the healthful skin, thus making their destruction complete.

Not alone in surgical work is the use of this agent indicated, but from a medical point of view its peculiar properties suggest its use, and in accordance with such suggestion it has been guardedly administered and its general actions noted as far as possible.

(*a*) Over four years ago Miss M., a dressmaker, began to complain of a gastric disturbance, the signs and symptoms of which were indicative of gastric ulcer. This condition existed in a varying degree of severity till about one year ago, when hemorrhage severe enough to threaten life occurred. Ordinary remedies were administered and the hemorrhage largely but not entirely controlled; there remained occasional attacks of vomiting, which showed degenerative changes within the stomach.

Improvement was not satisfactory. Believing that this condition was induced by the development of some microorganisms, or the activity of some of the digestive ferments within the stomach, pure antiseptic treatment was decided upon and formaldehyde chosen as the agent. (For its action upon digestive processes, see THERAPEUTIC GAZETTE, Oct. 15, 1900, pp. 692, 693.) Two-minim doses well diluted were given every four hours. Immediately following its administration satisfactory and rapid improvement was noted, and the patient is now enjoying better health than for some years past.

The mode of administration which was most satisfactory to the patient as well as to myself was to dilute two minims of the agent in two drachms of water, and to swallow quickly this potion and follow it at once by one-half glass of water; the smarting sensation was then reduced to a minimum.

(*b*) About two months ago I was summoned to attend a case of dysenteric diarrhea in a child. The case was a very severe one from the onset; the child grew gradually worse until death was hourly expected. A change was then made from the usual remedies, and formaldehyde was prescribed in one-minim doses mixed with egg albumen; the disease in its active stage was soon arrested and the patient's life prolonged, but the integrity of the intestinal tract was so altered that death occurred some ten days later, due to malnutrition.

A younger child in the same family was similarly affected, and not till formaldehyde was prescribed, as in the case of the boy, were changes apparent; the child then made a rapid recovery.

(*c*) Lastly, your attention is called to formaldehyde as a prophylactic agent. In the eruptive diseases, more especially so in scarlet fever (on account of the hardening and germicidal properties of this agent), is its value most apparent.

We are all aware how hard it is to enforce strict quarantine over a patient during the entire period of desquamation; we are also aware how difficult it is to determine when no danger exists, when no specific microorganisms can be conveyed from the convalescent to the uninfected. Experimentation has proven, to my satisfaction at least, that when it is applied externally, in scarlatinal cases, beginning with the eruptive and carried well into the desquamative stage, the latter stage is materially shortened, while the vitality of these microorganisms is destroyed within the nidus, the scale, a considerable period of time before desquamation is completed. This conclusion is based upon experience, an experience that warrants the conclusion that as such prophylactic agent it stands without a peer.

It matters not, if the germ be dead, where the scale may go; it can do no harm, it can

produce no life, its power of reproduction is destroyed, reinfection must come from a new source.

Its use as a medicinal agent is only advocated where germicidal medication is called for and indicated; not that it will cure all diseases all of the time, but rather that it may affect, in a desirable way, some of the specific diseases a part of the time.

22 East Miller Street.

A NOTE ON THE TREATMENT OF CIRRHOSIS OF THE LIVER.

By F. J. Bowles, M.D.,
New York.

In a recent issue of the Therapeutic Gazette I read an article on this subject, and am induced by it to report briefly a case coming under my own care.

I had treated Mr. —— for a period of about ten years. So far as he was personally concerned, my services were almost invariably for "bilious" attacks. These were of more than ordinary severity, and would keep him in his room for a few days. In September, 1896, I operated on him for hemorrhoids, which, as he then told me, had given him a great deal of trouble for ten years or more. After this his general condition was materially improved, his "bilious" attacks being less frequent and not so severe.

In addition my patient gave a history of specific disease, the primary lesion dating back twenty years. Since the disappearance of the evidences then present he had presented none of the manifestations of the remote effects either in himself or his children, unless the interstitial condition of his liver could be so regarded. He had always been a moderate user of liquors, and within the eight years preceding the ascites had indulged quite freely. As he expressed it, he felt the need of stimulants to enable him to get through his duties, although his occupation was a sedentary one.

This gives us a case in which one would feel warranted in making an unfavorable prognosis when a patient presents himself with such well marked ascites as mine did in December, 1898. I may say the several examinations of the urine gave no evidence of disease of the kidneys; and the heart and lungs were in normal condition.

I was obliged to give him relief from the pressure of the fluid in January, 1899, when I found the quantity equaled thirteen quarts. At the time I thought it good practice to wait until the patient's condition was made so uncomfortable that tapping would become a necessity. In the light of experience and upon reflection I am led to question the wisdom of such a course.

From this time until June 14, 1900, I tapped ninety-seven times. The interval up to July, 1899, was from five to seven days, with an average quantity of about six quarts. I was then obliged to shorten the intervals until January, 1900. During these six months he was tapped forty-eight times, with an average amount of from five to six quarts, reducing to four quarts during the latter part of the period. In January he was tapped seven times, in February five, and in March four times. The improvement was rapid from this on until June 14, when I tapped him for the last time, after an interval of five weeks, and with the quantity reduced to one quart. This was done more as a precautionary measure, as he was making a visit west, and wished to avoid so far as possible the necessity of calling in a physician with whom he would not be acquainted. His condition at the present time is very satisfactory indeed, as he is able to attend to business, and expresses himself as feeling better than he has in ten years.

The diagnosis was concurred in by Drs. E. J. Ware and S. V. Ten Eyck, who saw the case for me in August, 1899, during my absence from the city, and also by Dr. C. N. Dowd, with whom I discussed the possibility of establishing collateral circulation by surgical measures. The rapidity with which the abdominal cavity filled in after tapping determined us against making the attempt, as means looking toward draining off the fluid during union had not thus far been attended with success, sepsis usually resulting. Treatment with mercury and potash, alone or in combination, was tried on two separate occasions, having in mind the specific history, but was abandoned as not only disappointing in results, but as rather aggravating the patient's condition by interfering with digestion. The chloride of gold and sodium after a faithful trial was discontinued, as we could discover no benefit from its use. The usual diuretics and cathartics were given with but temporary effect in influencing the ascites, and possible ill effects in other respects. Restrictions as to diet, and an exclusive milk diet, were strictly observed without in any case accomplishing more than a transitory effect.

To what, then, do I attribute his apparent restoration to health?

In reply I have only to say that my patient became a total abstainer as soon as he realized his condition; that after a time he indulged in a mixed diet; that the plan of medication referred to above was abandoned, and five-drop doses of the fluid extract of apocynum cannabinum were given three times daily. With the commencement of the administration of this drug my patient commented on his improvement, and to it he ascribes the credit. He claims clinical evidence of its efficacy in the fact that he has at different times interrupted its administration for a few days, when edema of the ankles would follow, to disappear rapidly when he resumed its use.

With my limited experience in the use of this drug, together with its being a matter of record that cirrhosis of the liver does, in exceptional cases, follow the course it fortunately did in my patient, I am led to report the case and wait for the accumulation of evidence.

MERCUROL AS AN ANTISEPTIC IN DISEASES OF THE NOSE AND EAR.

R. LAKE writes in *The Lancet* of December 15, 1900, about this new antiseptic. He tells us that mercurol is a brownish-white powder, soluble in water but insoluble in alcohol. It is a compound of mercury with nucleinic acid, and contains about ten per cent of mercury; therefore a five-per-cent solution of mercurol contains one-half per cent of mercury, and this in a form which is non-corrosive and non-irritant. It is at the same time an organic compound and does not precipitate albumin; the general idea which mercurol gives being that at one and the same time it is an antiseptic in the usually understood sense of the word, and will act indirectly on the protoplasm of the nuclei, more especially of the large white blood-cells, as the phagocytes, and thereby enable them the more readily to overcome microorganisms and destroy them in larger quantities. One disadvantage of solutions of mercurol is that one cannot keep it in large quantities, a week being probably the longest time which it can be kept with safety; this, however, is equally true with that most useful antiseptic, formalin, but there is no doubt that in order to obtain the most efficient action of mercurol it requires to be employed like chlorine, freshly made.

Dr. Lake has not kept regular statistical accounts of all the cases of chronic suppurative otitis which he has treated with mercurol; and even if he had, the probability of mercurol being found largely superior to other antiseptics in this disease is very problematical, chiefly on account of the mechanical obstructions to the antiseptic reaching the parts affected. In acute suppurative otitis, however, the conditions are very different. He has used it in three cases immediately after incising the membrana tympani. It should, of course, be used to disinfect the canal previously to the operation where it is to be used afterward as the antiseptic. The three cases were all cured within ten days, the most rapid cure being four days.

Dr. Lake has used mercurol (two-per-cent) twice after operations, one being a double ossiculectomy and the other an operation for opening the frontal sinus. The wounds in both cases remained in an absolutely satisfactory and aseptic condition, though one would frequently find it necessary to change from so bland and unirritating an antiseptic to one having the strongly caustic properties of five per cent of carbolic acid, especially where much ulceration remains, the tendency of which to secrete it is frequently desirable to overcome. He has also irrigated the frontal sinus with it via the infundibulum with satisfactory results; but as these cases have been amongst hospital patients, and he has been unable to see them sufficiently often, he cannot attribute a cure to mercurol in this respect, though the general impression he derived was that had he been able to use it sufficiently often, say daily, it would have given better results.

With regard to chronic suppuration of the middle ear Lake has only quoted one case. From the small number of cases in which the drug was systematically used the general results may be apparently slightly above the average obtained by other antiseptics. But, as before remarked, it is the anatomical and mechanical obstruction to the penetration of any particular remedy to the seat of the disease that renders this ailment so intractable. So to claim for mercurol any peculiar and specific action in this disease would be, in his opinion, absurd. His general experience is that mercurol is the least irritating efficient antiseptic with which he is acquainted, being possessed of properties which commend it highly, especially as a lotion for the irrigation of cavities such as the maxillary sinus.

The Therapeutic Gazette

EDITED BY
H. A. HARE, M.D.,
GENERAL THERAPEUTICS,
AND
EDWARD MARTIN, M.D.,
SURGICAL AND GENITO-URINARY THERAPEUTICS.

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Leading Articles.

SOME FACTS IN REGARD TO HYPODERMOCLYSIS.

Five or six years ago the GAZETTE published several articles, chiefly in its editorial columns, dealing with the value of hypodermoclysis, or the introduction of artificial serum into the subcutaneous tissues, in the treatment of a number of conditions. Indeed, we believe the GAZETTE was one of the first, if not the first, journals in this country to popularize this very valuable method of treatment, which has since become one of the most constantly and widely employed measures. That its wide employment has again and again saved life cannot be denied. We have in many instances seen apparently hopeless cases saved by its proper application. Not only does it dilute toxic materials in the body in cases of infectious diseases and other forms of poisoning than infection, but it causes the elimination of toxic materials by increasing the flow of urine, and in many instances, in this indirect manner, benefits the general genito-urinary tract by diluting the urine so that it is no longer irritating. As with most therapeutic measures which are greeted with enthusiasm, it has been at various times somewhat abused — that is to say, it has been given to patients who were so ill that no good could be expected from its employment, and then when it failed to do good has had discredit cast upon it. Then, too, it has been abused, in that non-sterile apparatus has been employed, which has resulted in the production of local inflammation; and again, the salt solution has been poured so freely into the subcutaneous tissues that it has practically drowned the patient by being introduced faster than his emunctories could eliminate it. Finally, we know of instances in which the solution has been employed so hot, by a careless nurse, that a local slough has been produced; and again, of other cases in which the fluid was entirely too cold. Hypodermoclysis is not a method of treatment which can be hurried. The supply of fluid to the subcutaneous tissues ought never to be so free as to produce a huge swelling resembling a hematoma. While a certain amount of swelling necessarily comes from the extravasation of fluid, it ought at no time to be tense, and at no time so large as to indicate that the body cannot absorb it almost as fast as it is poured in. Of course, in instances where the body is starved of blood because of hemorrhage, absorption takes place more rapidly on the part of the hungry blood-vessels than it takes place in a case of Bright's disease, when the subcutaneous injection is employed to dilute poison and to increase urinary flow. Therefore no definite time for the duration of the injection can be named, since the hemorrhage case on the one hand should receive and can absorb the fluid rapidly for the needs of the body, while the renal case not only does not need it within the next few minutes, but will not absorb it with sufficient rapidity to prevent great subcutaneous swelling unless the flow is slow. Then, too, there can be no doubt, as we have already suggested, that at times too large quantities of fluid are introduced.

It has been recently suggested by Dr. Kemp, of New York, that in children often so small a quantity of liquid as one to two ounces of normal saline solution is sufficient, and that four ounces will often be of value in increasing the urinary flow in adults. It is a noteworthy fact that these injections not only increase the urinary flow as a rule to the extent of the injection, but that they

seem to possess a distinct diuretic influence in that the urinary flow is three or four times as great as the quantity actually injected. The best place for the injection is probably in the lateral lumbar region, since this part is not well endowed with sensory nerves, the tissues are lax and can receive a considerable quantity of liquid, and should any local irritation ensue the part is not pressed upon when the patient is lying in bed.

A very common fault in the administration of hypodermoclysis is the employment of water which is not hot enough. Even although the fluid may be quite hot when it is placed in the reservoir, it very speedily cools as it passes through the long thin rubber tube which conveys it to the needle in the patient's skin. The consequence is that while at the beginning of the injection the reservoir may contain hot water, from the very beginning the fluid delivered to the patient is too cold. There are two ways in which this fault can be avoided: one is by using very hot water in the reservoir, which possesses the disadvantage that should the flow be too rapid the patient may be locally burned; or better still, a section of the tube from the reservoir may be coiled several times in a basin of very hot water, which water may be renewed from time to time, and in this way the fluid, as it flows through the tube, is kept at the proper temperature. It is not necessary, as a rule, to use water in the reservoir above 120°; but the water as it is delivered to the patient should be from 105° to 106°.

It is to be recalled that these injections have a very wide clinical application. The following are some of the conditions which they are of value in meeting: Hemorrhage, surgical shock, toxemia from sepsis or any one of the infectious diseases, puerperal eclampsia, renal disease, diabetic coma, poisoning by the various vegetable alkaloids, snake poisoning, etc. In scarlet fever and diphtheria, and in certain cases of pneumonia with marked toxic symptoms, the injections are without doubt of very great value, as they are also in some cases of suppression of urine from etherization. The solution which is employed, modified from the formula of Ringer by Locke, as we have pointed out before, can now be obtained in the form of "concentrated sterile saline," put up in ounce bottles, thoroughly sterilized and sealed, and of such strength that if the contents of one of these bottles is added to a liter of pure water, a normal saline solution is at once at hand. This is very much better than the use of saline tablets, which are often difficult to dissolve, and which not infrequently leave some sediment in the solution. Further than this, this mixture is very much better than the ordinary salt solution made with sodium chloride, or common salt, alone, in that it more closely approximates the normal serum of the blood. Recent physiological researches published in the *American Journal of Physiology* indicate that solutions made of chloride of sodium alone are by no means as harmless as many persons have supposed.

THE TREATMENT OF RICKETS.

Many years ago it was supposed that the chief if not the sole cause of rickets in children was due to their taking food which did not contain the proper quantity of lime salts, and other bone-forming ingredients, to supply the growing bone structures with the needful amount of material. To meet this supposed need, many of these patients received not only foods which contained considerable quantities of bone-forming material, but in addition were given preparations of lime and soda with the expectation that the deficit in the food would thereby be corrected. Gradually, however, some of the profession came to know that in a certain proportion of cases of rickets the difficulty did not lie with fault in the foodstuffs, but rather depended upon an inability on the part of the individual to assimilate the bone-forming materials which the food actually contained. Or again, that if these substances were properly taken up from the digestive tract, the whole process of bone nutrition was so perverted that they were not properly deposited, and so bony tissue was not properly developed.

It is not to be denied for a moment that in certain instances rickets depends upon faulty and poor food, but the aspects of the case which we have just presented are also not to be denied. Indeed, some, as is well known, have gone so far as to assert that rickets is an infectious disease. While the latter view has not gained many adherents, yet a sufficient number of able men have supported this hypothesis to make it worthy of respect. Again, while foods may contain a sufficient quantity of bone salts, they may be unsuitable in other respects, and by disordering digestion absolutely prevent the child from obtaining the various substances that it needs.

If a food contains too much water, too much fat, or too much sugar, digestion and nutritional changes may be altered in the manner that we have described with a similar result. This is probably one of the reasons why bottle-fed children are more frequently rachitic than those who are fed with mother's milk, particularly if the child is fed from bottles prepared from condensed milk, which feeding frequently results in the development of a very fat baby which has no vital resistance and readily succumbs to the first illness from which it suffers. Indeed, we do not know any more remarkable fact in medicine than the lack of vital resistance often shown by such babies, which are apparently splendid specimens of babyhood, until they are attacked even by moderate illnesses. There is no doubt in our minds whatever that bottle-fed babies who have received condensed milk for a long time are a fair mark for almost any illness, epidemic or otherwise, to which they are subjected. The rachitic state, too, is sometimes overlooked as being the provoking cause of many disorders of digestion and of the respiratory system, for which states remedies other than antirachitic substances are frequently given. How often we see instances of undue susceptibility of the mucous membranes to cold, or attacks of spasmodic croup, arising as the result of improper feeding which directly produces an attack or results for many days in nervous perversions which destroy the child's health. Careful attention to the diet and the study of the nutrition of the nervous and bony system of the child will frequently clear up cases which otherwise seem most difficult in diagnosis and treatment. Not long since we saw a patient which manifested none of the rachitic symptoms except that it screamed and cried incessantly, wearing out his mother and nurse, which was in reality instinctively screaming for various foodstuffs of which he was being deprived, the screaming being due to nervous inanition.

With regard to the discussion as to the value of phosphorus in rickets we have not time at present to deal. Much has been written claiming that it is not a specific remedy in rickets. In all probability it will be found that it is exceedingly advantageous in some patients, and in other instances it does not meet the needs of the case because rickets, like many other conditions, arises through various causes which must be met by different lines of treatment. To the average child we think that phosphorus can be given best in pink granules containing a two-hundredth of a grain. But if this is not possible, a prescription which is quoted by Hand as follows may be employed:

Phosphorus, 1 grain;
Absolute alcohol, 350 minims;
Spirit of peppermint, 10 minims;
Glycerin, 2 ounces.
Six to twelve drops three times a day after meals.

FEEDING IN TYPHOID FEVER.

On two or three occasions within the last two years we have mentioned this subject in the editorial columns of the GAZETTE, and we return to it at this time simply because we wish to reiterate our belief in the fact that many cases of typhoid fever do not receive the quantity of nourishment which their condition demands. There is always danger when physicians begin to leave a habit of years of passing to the opposite extreme and giving too much food, and we do not wish to be understood as believing that typhoid fever patients should be stuffed in the manner in which we are wont to use superalimentation in other patients who are recovering from diseases which have sapped their vitality, but which have not, in all probability, so materially interfered with the digestive organs as does the disease we are speaking of. A recent statement made in the *University Medical Magazine* is perhaps the chief reason for these remarks being made at this time. After quoting the papers of Shattuck, Thayre, Vaques, Fitz, Manges, Marsden, and others, the writer expresses his belief that full feeding in typhoid fever not infrequently produces a recrudescence of fever, and even a relapse, and the researches of Horton Smith upon the bacteriology of the intestinal contents in typhoid are quoted as indicating that too hearty feeding may greatly increase the possibilities of reinfection by those bacilli which are in the intestine. Attention is then called to the fact that the employment of soft eggs and broths is always apt to produce a decided rise of temperature. We believe that soft-boiled eggs can be taken advantageously, provided they are so softly boiled as to simply have the raw taste removed from them, and that they are not masses of albumen which may be difficult to digest.

We have always held that the administration of various broths made of meats to typhoid fever patients is disadvantageous, as in a large number of cases it increases fetor of the stools, diarrhea, tympanites, and

the manifestations of toxemia. On the other hand, it has been our experience that many patients are able to take rice which has been carefully strained, or mashed into a pulp after thorough boiling, corn-starch, eggs, and similar articles of diet, easy of digestion, not only with impunity but with very distinct advantage, particularly if the digestion of these starches is aided by the administration of taka-diastase in its liquid or powdered form. There can be no doubt that the use of taka-diastase under these circumstances is of very great value, as it is important that digestion of the starches should be carried on rapidly before fermentation changes can take place, and it is equally important that the results of this form of digestion should speedily gain access to the organs of assimilation. When we consider that carbohydrate materials are required by all persons who are suffering from fever, in the sense that it is these substances that are largely affected in the febrile processes, the importance of this form of feeding is emphasized, and we believe that in many instances of prolonged illness physicians will do well if they do not confine their patients solely to meat extracts and proteid foods, but will permit them to have a barley jelly, strained oatmeal, strained cracked wheat, or similar starchy foods, in order that the proper food balance may be maintained. There are very few of us in health that would get along well for several weeks if we were confined to beef broth and milk, and so far as we know, there is no good reason why simple and easily digested starchy food should not be digested and readily assimilated in a disease like typhoid fever.

We are glad to note in the article which we have quoted that the writer, Dr. Edsall, quotes with approval the warning by Bäumler, who, after an extensive experience in 1019 cases, states that in his belief the plunge bath should always be looked upon as causing some strain on the heart, and that in many instances it is wise to modify the plunging by cold sponging or even by tepid sponging in very susceptible individuals. This, it is to be remembered, is the standpoint which we have taken for a number of years, and on no occasion have we denied the value of cold plunges in many cases of typhoid fever, but we have urged that the use of them should be modified to suit the individual case in exactly the same way that the dose of any active remedial substance should be modified to suit the needs of each patient.

THE CHOICE OF OPERATIONS IN THE TREATMENT OF STONE IN THE BLADDER.

The splendid success achieved by the Bigelow operation in the treatment of stone in the bladder, this operation consisting in the crushing of stones and the washing out of the fragments at one sitting, would seem to have so thoroughly established this method of procedure as to make it our first choice in the treatment of vesical calculus. A discussion of its merits as compared with those incident to cutting operations would seem needless, yet there has been a reactionary tendency in recent years toward supplanting the Bigelow operation by perineal or suprapubic lithotomies, or toward materially modifying the original operation, in which the crushing and evacuating instruments were passed through the entire urethra by introducing them through the perineal opening. Thus, it is notable that of over 300 lithotrities performed at Hyderabad, ten per cent were operated upon through the perineal wound in spite of the fact that statistics show for this modification of the Bigelow operation a double mortality, and that a much longer period of convalescence is necessary. Milton, commenting upon these figures, expresses his belief to the effect that Keith's operation—that is, the introduction of the crushing and evacuating instruments through the perineal wound—is principally useful in facilitating the crushing of stone in small children and in other patients with a diminished urethral caliber, as a refuge for the imperfectly equipped and as a stepping-stone to better methods.

Milton notes Smith's analysis of 7954 operations for stone performed in various parts of India. Of this number, some 181 weighed more than two ounces, eighty-nine of these were treated by litholapaxy, with forty-six deaths. Milton's personal experience of litholapaxy for large stones has been forty-three cases performed by the urethral route, and including four stones between 6 and 12 ounces, three stones between 12 and 16 ounces, and one stone of 16¼ ounces. There were four deaths.

By the perineal route he has performed thirty-two operations for large stones, including six between 6 and 12 ounces, and one stone of 14 ounces, with only two deaths. Harrison has published fifteen cases with no deaths.

Milton's personal experience of 100 large

stones, weighing in the aggregate 400 ounces, has led him to the following conclusions:

That with a good lithotrite of dimensions within the limit of an average adult urethra almost any stone can be crushed, the exceptions certainly not being two per cent.

That the principal element of success in crushing a large hard stone lies in the prolonged and judicious application of the crushing force.

That a perineal lithotomy, preferably lateral, followed by the crushing of the stone and its evacuation with suitable instruments, will yield results little, if any, inferior to those of any other operation.

That the successful results of the above operation are largely due to the drainage afforded to the diseased bladder.

The enormous experience of the Indian and Egyptian surgeons in the treatment of stone in the bladder entitles their opinions to great weight. Their low mortality is doubtless in part due to a manual deftness which can be acquired only by constant practice; in part no doubt to the judicious selection of the operation best suited to the individual case.

To one who has had the trying experience of crushing and washing out a stone of more than six ounces in weight, the perineal method will commend itself on theoretical grounds. It is satisfactory to note that Milton gives good clinical data for this easier, much quicker method.

TUBERCULOUS PERITONITIS.

On the basis of a very large clinical experience and at the hands of many different operators, the fact that a large percentage of cases of tuberculous peritonitis can be cured by abdominal section seems to be well established; though it is to be noted that in certainly the great majority of cases the cure is reported at the time of convalescence from operative procedure or shortly thereafter, and there is no record of the remote results of operation; hence a statistical study is by no means convincing as to the permanency of the reported cures.

Oehler quotes Adossides to the effect that seventy-five per cent of 405 operative cases were cured, while Frank, writing upon the remote results of operative treatment for tuberculous peritonitis, believes that only forty or fifty per cent remain well for a long period of time. This latter observer notes the fact that tuberculous peritonitis not infrequently undergoes spontaneous resolution, and regrets that there is no statistical study upon which may be based a fair estimate as to the percentage of cases which would recover if subject to conservative treatment alone.

It is with this question that Oehler particularly concerns himself. In five years he has had to treat in his hospital experience 19,000 patients. Of this number 912 were tuberculous; forty-four of these were suffering from tuberculous peritonitis, and in thirty-nine of these cases the course and termination have been noted. Of these thirty-nine, eighteen are dead of meningitis; twenty-one are alive and well, giving the percentage of definite cures as fifty-one.

He notes that there may have been a mistake in the diagnosis in some of these cases. The diagnosis was based on emaciation, feverish reaction, occasional diarrhea, abdominal distention with liquid in the peritoneal cavity, and soft or hard nodules perceptible on palpation. To demonstrate the presence of ascites both percussion, with the patient in the recumbent and standing postures, and exploratory puncture are valuable means. A symptom of great importance is the frequent involvement of the navel and regions surrounding it. Nodules form here as they do in cases of intrapelvic cancer, and when present their diagnostic value can scarcely be overestimated. These nodules are sometimes extremely tender. When the vaginal process of the peritoneum remains patulous, the tuberculous involvement is very likely to extend along it, forming a nodular irregular cord with infiltration of the epididymis or even of the testis itself. The evidence obtained by auscultation is of slight moment; occasionally friction sounds can be heard.

It is a generally accepted truth that cases of tuberculous peritonitis with marked effusion are prone to recover.

Oehler points out that tuberculous peritonitis is essentially a disease of youth and childhood; that a common cause of death is meningitis; that the natural tendency, especially in children, is to get well. He supports his conclusions, which seem quite rational, by full details of some extremely interesting cases.

Even though a fair percentage of these cases recover without operation, this does not militate against the fact that a much larger percentage can be cured by section.

Since this can be performed under local anesthesia, without shock or bleeding, and hence without subjecting the patient to added risk, there seems no good reason why practically every case of tuberculous peritonitis should not be opened both for diagnostic and therapeutic purposes.

Reports on Therapeutic Progress

THE TREATMENT OF INTERNAL HEMORRHAGES.

WALTER GEORGE SMITH states in the *British Medical Journal* of October 13, 1900, that hemorrhages, whether external or internal, are all due to similar pathological events. The methods by which all hemorrhages are arrested are identical, whether the bleeding be from an external, visible, and accessible spot, or from an internal and invisible region. That is to say, there can be no contradiction in principle between the medical and surgical treatment of hemorrhage. We should take care not to do harm by our therapeutic procedures. Few cases of hemorrhage from the lungs, bowels, or kidneys are in themselves fatal or even imminently dangerous. Patients die after hemorrhage, but not often of it. The peace of mind of the patient is often more in question than his bodily risk. Many cases of hemorrhage stop naturally and speedily, if only let alone. Drug treatment of hemorrhage is often superfluous, and sometimes mischievous. The sources of hemorrhage are plainly three, namely: (*a*) Capillary oozing or rupture, for example, in early phthisis; (*b*) venous oozing or rupture, for example, hematemesis in hepatic cirrhosis; varicose veins; (*c*) arterial rupture, for example, aneurism, and phthisis in its later stages.

Is it not idle to speak of a common treatment for each and all of these, and absurd to administer the one drug—that is, ergot—in all three cases? No sane man treats bleeding from varicose veins by internal—that is, so-called remote—hemostatics. Whenever a bleeding vessel is accessible it is treated on rational principles. When it is hidden from our sight, guesswork and irrational hypothesis seem to have guided our therapeutics.

The processes by which hemorrhage can be arrested are closure of the bleeding point mechanically, by ligature, simple pressure, acupressure, torsion, and the like; coagulation of the blood at the source of bleeding produced by (*a*) certain changes in and around the bleeding vessels, namely, retraction, constriction of the blood-vessels, and clotting within and without the vessel; (*b*) diminution of the force of the heart's action—that is, a considerable fall in blood-pressure; in some cases of "bleeders" the only cure for hemorrhage seems to be to faint—that is, to bring the blood-pressure to a very low ebb; (*c*) alterations in the chemical constitution of the blood whereby clotting is favored, and coagulation tends to occur at a damaged portion of the tissue; this is the principle of Wright's proposal for the administration of calcium chloride. Leaving entirely out of consideration the approved surgical means of checking hemorrhage, let us in the light of the above principles look more closely at the medical treatment still commonly in vogue.

Local Styptics and Hemostatics.—There can be no doubt about the efficacy of these remedies, and their rationale is quite simple. They operate mainly in virtue of their albumen-coagulating properties, and their action can be analyzed into two factors, namely, formation of a primary albumometallic compound, and, in a few cases, constriction of the blood-vessels in addition. A glance through the text-books will soon show that the experiment of the action of internal hemostatics is at one time explained by the same principles which govern local styptics, and at another time it is shirked. The number of diverse remedies recommended, for example, in hemoptysis, is, to the writer's mind, at once an example of the *nimia diligentia medici*, and an additional proof that in a multitude of remedies there is no true cure. But what about the so-called internal or remote astringents which are so often prescribed? Most of them can be grouped under three heads, namely: (*a*) free acids, chiefly sulphuric and tannic acids; (*b*) metallic salts, chiefly of iron, silver, lead, and copper; (*c*) ergot of rye.

When in consultation on cases of hemorrhage, the remark is often heard, "We must do something." Quite true, but let us not do a foolish or a useless thing merely to comply with popular prejudice. Of the vegetable astringents, represented by tannic and gallic acids, suffice it to say that there is absolutely no foundation for the reputation which gallic acid has so undeservedly obtained—not even is it a local styptic. Tannic acid is, no doubt, a local styptic by its albumen-coagulating power. But the careful researches of

Stockman have demonstrated the futility of using it as a remote astringent. It is absorbed in the form of alkali tannate, which has no styptic power, as indeed is obvious from its presence in the blood. It is excreted in the urine as alkali tannate, and as gallic acid — that is, in a harmless and useless form. It is conceivable that a non-astringent combination such as alkali tannate might be disassociated in the kidney, and free tannic acid liberated, but this is not so. It is therefore childish to continue to prescribe internally either tannic or gallic acid for the relief of pulmonary or renal hemorrhage. In gastric and possibly in intestinal bleeding, large doses of tannin might have some effect, but they are nauseous and apt to sicken the patient. Ergot of rye is probably the leading favorite with most practitioners, and is recommended in every text-book of therapeutics or practical medicine in the treatment of cases of hemorrhage. For many years past Smith has never ordered it in such cases, and he never gives a hypodermic injection of "ergotin." Without entering upon the difficult question of the action of ergot, Smith points out that even if we admit as proven the oxytocic action of a drug upon a large and specialized mass of unstriped muscle under special circumstances, it is unwarrantable to assume that therefore it will cause contraction of the unstriped muscular tissue in the walls of the smaller blood-vessels. Moreover, the experimental evidence in support of the proposition that ergot does cause a wide-spread contraction of the smaller blood-vessels is contradictory, and it is only by experimental pharmacology that such a point can be settled. M. Liégeois a few years ago made a vigorous protest against the routine treatment of hemorrhage by ergot. Ellinger's experiments go to show that "ergotin" induces no vascular contraction. Likewise, as to the blood-pressure, the evidence is contradictory as to whether ergot raises it or lowers it. Ellinger believes that ergotin may have a specific action upon the blood itself whereby coagulation is more easily induced at susceptible points in the vascular cycle. We must also bear in mind, as Pick shows, that the proof that any given substance has the power of causing vasoconstriction in a certain area allows no positive conclusion to be drawn for its employment as a hemostatic in other territories of the body, because the final effect in the various vascular areas is a variable thing.

In his article on "Secale Cornutum" in Eulenburg's Real Encyclop., Bd. xviii, 1889, Vogl, while accepting the value of ergot in uterine and intestinal hemorrhage, demurs to its use in hemorrhage from the lungs and other organs because there is no satisfactory evidence that it causes contraction of the small arteries. At a discourse in the Manchester Therapeutical Society upon the treatment of hematemesis, Dr. Dreschfeld said that "ergotin injections did no harm and might do good," and the late Dr. Leech likewise stated that "injections of ergot did no harm and seemed to do good." This is faint praise, and Smith is not so sure that we can confidently say that ergot does no harm. Apart from the pain and local troubles that sometimes ensue upon hypodermic injections of this drug, it is, if given by the mouth, liable to induce nausea and even vomiting, and to upset the digestion, surely very undesirable things. If ergot did cause a wide-spread narrowing of the peripheral blood-vessels, would not this raise the blood-pressure, and so be the worst possible thing to do in a case of hemoptysis?

Dr. Hawkins considers that he has observed in a case of hemoptysis occurring in a patient with renal cirrhosis that the administration of ergot increased the hemoptysis. Dr. A. Foxwell gave ergotin a fair trial in hemoptysis. When he was resident medical officer at the General Hospital, Birmingham, his routine treatment was thirty grains of Bonjean's ergotin injected deeply into the muscles of the buttocks. He says: "I never saw any injurious effect, local or general, result from such treatment; nor can I say that I was ever able to definitely associate any cessation in the hemoptysis with its use." He further pertinently asks, "But were it good to contract the arterioles of the lungs, how do we know that ergot will do this?" "It is difficult to understand," says Dr. Hess of the Falkenstein Sanatorium, "how one of the last named drugs (hydrastis, ergotin, stypticin) could directly influence a hemorrhage which usually originates in a blood-vessel embedded in an infiltrated or diseased mass, the wall of which, especially the muscular coat, has been considerably damaged."

What treatment, then, is rational, say, in an urgent case of hemoptysis? (1) Reassure the patient and calm his natural alarm and excitement and that of his friends by a few judicious words and simple directions, and emphasize the fact that hemorrhage *per se* is rarely a matter of urgency. It is curious to observe that gastric hemorrhages, which are

often of much more serious import, have not the same depressing effect upon the patient as a slight tinge of blood in the expectoration. (2) Avoid irritation of the gastric ends of the vagus nerve. Therefore do not administer cold drinks or pieces of ice to patients suffering from phthisis complicated with hemoptysis. Cold drinks irritate the gastric branches of the vagus, give rise to cough, and thus aggravate the bleeding. Moreover by causing contraction of the blood-vessels of the stomach, they may tend to increase the flow of blood to the lungs, and intelligent patients, the subjects of hemoptysis, usually discover the truth of this by experience, and avoid cold drinks (Eklund). Allow, on the contrary, warm mucilaginous drinks. An ice-bag to the outside of the chest is perhaps of use. (3) Keep the patient absolutely quiet in mind an body. (4) Give morphine hypodermically; this is the best thing of all to do. (5) Relieve the bowels freely by magnesium sulphate or by calomel. (6) Let the diet be simple and nutritious, reduce the amount of fluid, and give no alcohol.

SOME OBSERVATIONS ON ANESTHESIA BY INTRASPINAL INJECTIONS OF COCAINE.

GOLDAN writes in the *Medical News* of November 10, 1900, that when he used this method some of the patients were entirely free from all subjective symptoms. Anesthesia failed entirely in three cases, in two of which more than half a grain of cocaine was injected. In others anesthesia was partial; in still others a second injection produced satisfactory anesthesia. Marked toxic symptoms developed in one patient, an obstetric case. The respiration was gasping, shallow, and sixty to the minute; pulse 140, small and irregular; profuse perspiration; muscular tremors; face absolutely colorless; pupils contracted. This patient had very intense headache for two days following the injection.

Deductions based upon his own experience and also the reports of other investigators which do not materially differ from his can be summed up as follows:

1. Cocaine introduced into the subarachnoid space acts in the same way as it does when injected into the general circulation, being possibly less toxic.

2. There is no definite quantity which will answer in all cases. Some are easily influenced by small doses, whereas others require large amounts to produce the desired effect.

3. Temperament, type of patient, and condition of health do not seem to influence the action of the drug. Large, healthy individuals are often affected by small doses, whereas the sickly, emaciated types often require second injections to produce anesthesia.

4. There is no method of determining how any particular dose will act in a particular case.

5. Large doses should never be used until the individual susceptibility is determined.

It is singular that when a first injection produces no anesthetic effect it also produces slight physiological symptoms. A second injection may then be made with safety. When anesthesia is but partial a second injection may be made; this to be less, however, than the first.

BRONCHIAL DISEASE NOT INVARIABLY A CONTRAINDICATION FOR ETHER ANESTHESIA IN ABDOMINAL SURGERY.

THADDEUS REAMY is very positive in his assertions in regard to this point in the issue of the *Medical News* of November 10, 1900. He states that his record shows a number of cases anesthetized and operated on when bronchitis in the first stage, acute form, was present, with the result of arresting cough, and destroying the mucous congestion present; but the length of his paper forbids his giving further details or recital of cases.

He finally reiterates the statement that his clinical studies justify him in the belief that in properly selected cases ether inhalation is positively curative of bronchitis. That its action in these cases is largely local he has no question. To avoid unpleasant complications and to secure the desired results, the following points are essential: (1) Proper preparation of the patient. (2) Preparation of the operating-room with a temperature of 98° to 100° F. (3) Pure ether. (4) A proper inhaler. (5) The proper methods of administration. (6) Due caution against exposure in removing the patient from the operating-room to her own room. The temperature of her own room should not be below 80° to 90° F. for several hours after the operation. (7) Proper care of the patient during convalescence. She should be permitted to drink large quantities of water and should keep the bowels freely open.

A NEW AND TOLERABLE FORM OF ADMINISTERING MERCURY IN THE TREATMENT OF SYPHILIS.

AYRES states in the *Philadelphia Medical Journal* of November 10, 1900, that mercurol is superior even to mercuric chloride in controlling the symptoms of syphilis, and this is proved, in his opinion, by the trial he instituted. Like all preparations given internally mercurol has very little effect on the chancre; still, it has hastened the healing slightly. It seems to be much more efficient in controlling skin eruptions than mucous eruptions.

Two further remarks may here be made: first, that the number of patients who have returned for treatment is unusually large for dispensary work; and secondly, that of twenty-five patients whose cases he reported, none required to be put upon potassium iodide to control the secondaries. In one case the addition of potassium iodide had no effect in controlling the pains. In another case the eruption was one of tertiary variety —that is, marked thickening of the skin.

It has seemed to the writer in the short time that he has used mercurol (1) that it causes less disturbance of the gastrointestinal tract than any other preparation of mercury used internally; (2) that it controls skin eruptions and pains much better than any other preparation, while it controls mucous eruptions as well as any other, and has equally good effect on the chancre; and (3) it is an advantage that it can be taken in pill form. These three points make the preparation one of great value.

VALUE OF POTASSIUM BICARBONATE IN COLDS AND INFLUENZA.

HARNSBERGER states in the *Philadelphia Medical Journal* of November 10, 1900, that in his experience potassium bicarbonate, given early, will, in nearly every instance, abort a cold very effectually and almost at once. The remedy is well borne by both elderly and weak persons. Nor is it necessary for them to keep indoors as after the treatments commonly in use. Even when the case has advanced further and fever is present, this drug, with others indicated, will help greatly to reestablish the normal adjustments of the body. In those cases in which the tonsils are involved or in which the catarrhal inflammation affects the other air-passages, or the alimentary canal, potassium bicarbonate will demonstrate its benign influence. Pneumonia is a less frequent result in such cases, and when it does come on, he finds it runs a much milder and shorter course.

But it is in influenza that Harnsberger particularly speaks of potassium bicarbonate as a remedy of unusual value. He began its use in this disease in the autumn of 1889, and his observations of its beneficial effects through the epidemics of influenza since that year have convinced him that it is a therapeutic agent in which we can place the utmost confidence. According to his experience an influenza is the only disease which seems to weaken the adult heart muscle primarily, or from the very outset of the attack. This is why pneumonia is so frequent a complication. The patient either succumbs to pneumonia or is left in a weak condition, with lowered digestive function and an irritable condition of the heart, physical exertion being almost out of the question. He does not attempt to explain in what way potassium bicarbonate acts, but he finds that his patients taking the drug get quick relief, and make a more speedy and thorough recovery.

Osler, in speaking of the treatment of influenza, says: "The depression following the disease is one of the most unpleasant and obstinate features." Tyson says: "Weakness following influenza may be extreme, and the slightest effort, physical or mental, promptly convinces the patient of this, and the duration of the weakness may be prolonged for months." Of course, as we all know from experience, it is this weakness or depression in the acute stage and subsequently that the danger chiefly lies. Exertion, diaphoretics, coal-tar derivatives, etc., only tend to increase the danger by still further lessening the resisting power of the system. Potassium bicarbonate, following a free action of the liver, rest, and a concentrated liquid diet, are in the writer's experience the best safeguard against the development of still more unfavorable and perhaps fatal prostration.

Harnsberger gives thirty grains of potassium bicarbonate in a cup of milk every four hours during the day, and no other diet for forty-eight hours, and finds that this will, in most instances at least, quickly start the patient along to health. When milk is not well borne or readily taken, administer the remedy with a glass of water and allow only liquid diet, and in from thirty-six to forty-eight hours most patients will feel better and want to eat.

Nothing seems to assist the action of po-

tassium bicarbonate so well as a cathartic, such as calomel, podophyllum, etc. In fact, there are cases in which it is extremely difficult to get the bowels to move on account of a temporary paresis of the muscular coats of the intestines. These patients do not show so much systemic weakness or heart depression, and when the functional activity of the bowels is restored, they very rapidly return to health. But whether the disease affects the brain, the lungs, the heart, or the bowels, the writer is confident, from a considerable experience, that no treatment for influenza will do more genuine and permanent good than full doses of potassium bicarbonate.

The prognosis of influenza of a severe type is much worse in the weak and elderly, on account of the frequency and special tendency with which the heart muscle is involved —especially the tendency to acute dilatation and the liability of the attacks to be complicated with pneumonia. The tonicity and resisting power of the heart muscle in adults seems to be lowered in this disease—a striking resemblance to a like condition of the heart muscle in children suffering from severe acute infectious diseases. To obviate this danger, cases of this character of influenza in adults should be treated with maximum doses of potassium bicarbonate, and absolute rest in bed enjoined. Harnsberger has now a patient who will round up 100 years of age on September 26 next, who is doing well on potassium bicarbonate, though she showed in the outset of the attack every symptom of beginning pneumonia and cardiac failure.

MASSAGE OF THE EYEBALL.

Casey Wood, the well known Chicago ophthalmologist, states in the *Journal of the American Medical Association* of November 17, 1900, that he has used ocular massage extensively for many years, and avails himself of this opportunity of exchanging with his colleagues opinions as to its efficacy.

First, he speaks particularly of the simple and not of the instrumental variety, such as the direct rubbing with pieces of cotton-wool or some fabric mounted on a convenient shaft, the tapotement (or tetanization) of Maklakow, the use of sounds, with or without buttonheads, and other devices. In the main, indirect massage (Pagenstecher, Michel) with the pulp of the finger placed on the skin of the lids is to be preferred. Costomiris, formerly of Athens, who speaks enthusiastically of massage, believes that the best results are obtained by the direct rubbing of the fingertip or tips on the exposed cornea and conjunctiva. So far as the latter membrane is concerned, he believes that direct massage is valuable, and in some instances decidedly preferable to the indirect method, but the stroking movements, with slight pressure on the exterior of the eyelids, are usually sufficiently efficacious, are certainly less difficult to carry out in practice, and are more readily borne by the majority of American patients.

It is necessary to say that the amount of force used, the length of each sitting, the frequency of the applications, the strength and character of the remedial agent, if any, used with the rubbing, and the susceptibility of the patient, are prime factors in the successful employment of massage, and are quite as important as the selection of cases appropriate for this remedy. Let us consider these in the order stated.

In indirect massage the act should never of itself produce pain, and rarely more than a passing discomfort. Wood thinks little is to be gained by the employment of much force. If the lids are the parts to be treated the patient should be told to look down in massaging the upper lid, and up in the case of the lower lid. In each instance the other lid should be drawn away from the one undergoing massage. If the cornea is to receive attention, the patient should look straight forward. The duration of the séance must be varied according to circumstances; it should rarely exceed three or four minutes. The tip of the second finger he has found the best instrument for the application, as it can readily be used for all the movements of palpebral massage, circular, centrifugal, and centripetal. It is also well adapted to the to-and-fro pressure required to reach the conjunctival areas about the inner and outer canthi. Once daily to twice a week constitutes the range of frequency of these applications. It is better in most cases to perform a gentle, non-irritating massage of even ten minutes' duration daily than a rough, painful rubbing twice a week.

As to the strength and character of remedial adjuncts, and without discussing the action of massage, which forms no part of this paper, Dr. Wood has come to rely on variations of some half-dozen remedies. When he desires to use massage for its own sake, as he usually does, he instils a drop or two of cod-liver oil or pure castor oil, telling

the patient to wink and move the globe about so as to thoroughly distribute the oil throughout the conjunctival sac before beginning massage. For the rest, he greatly prefers oily solutions or mixtures to powders or collyria. When these oleaginous compounds are made perfectly smooth and of a consistency that permits of their ready distribution over the eyeball, it is surprising how little pain or discomfort is set up even by strong doses of such irritants as mercuric chloride, silver nitrate, etc. This is probably owing to the fact that massage has an anesthetic action, due to emptying the capillaries and lymph-vessels of their contents and to the continued pressure on the nerve endings.

Most observers find in mercurials of various strengths, combined with all sorts of oleaginous excipients, the most useful massage agents, and Wood's experience coincides with theirs. At this stage of his address he invited inspection of a brown ointment of this character that he had found very effective, and one which combines qualities of great value in ocular massage. It is nothing but the old citrine ointment — the ointment of the nitrate of mercury — made with brown cod-liver oil instead of lard oil. This, after standing exposed, to get rid of irritating nitrous fumes, for a week or ten days to the air, but not to dust, may be further diluted with from twenty-five to fifty per cent of cod-liver oil. It should be dropped from the end of a glass rod or silver probe into the lower sac. If the massage movements are begun at once, the smarting is very slight and transient, even when the stronger mixtures are employed. The subsequent action of the remedy can be modified as desired by the length of time, usually an hour, before it is washed off the eyelashes with warm water.

At the end of or during the act, combinations of the remedy with the ocular secretions — especially mucus — should be coaxed out of the sac by small "dabs" of damp cotton, or, if watery or glycerin mixtures be employed, by the irrigating stream, and the stroking movements resumed until nothing further comes away.

Dr. Wood emphasizes the contention that one rarely gains anything by inducing a marked hyperemia of the scleral or ciliary vessels by using force or by the employment of very irritating adjuncts in massage. A little smarting that passes off in five minutes, a temporary congestion of the already visible vessels, and, perhaps, some foreign body sensations, are all that is justifiable. He generalizes by saying that the patient, half an hour after the lid friction, should not experience any added discomfort. It is evidently impossible for him to even enumerate the various diseases of the lid proper, conjunctiva, lacrimal apparatus, cornea, and of the interior of the eye, in whose treatment massage has many warm friends. In a general way its most satisfactory employment will be found in chronic diseases of the eye borders and substance, in almost all those subacute and chronic infections of the conjunctivæ that one commonly includes in the title "conjunctivitis" — with or without an adjectival affix or prefix—in the second stage of acute inflammation of the conjunctiva, in most forms of ulcer of and deposit in the cornea, and it may be employed for the temporary relief of glaucoma and in some forms of retinal embolism. It is not indicated in the early stages of "acute conjunctivitis" and of "keratitis," in all forms of true trachoma, in spring catarrh—although Costomiris and others dissent from this opinion—in diseases of the iris, ciliary body, lens, choroid, vitreous, or optic nerve. Finally, while he is very skeptical of its efficacy in the absorption of the connective tissue that composes the mass of a true cicatrix, he is convinced that, in young subjects especially, it does lessen the opacity following ulcer of the cornea. If applied early it promotes the removal of the surrounding infiltrate that would otherwise remain. In the same way it is valuable in the treatment of interstitial keratitis.

THE MEDICINAL AND DIETETIC TREATMENT OF HEART FAILURE IN THE AGED.

In the course of a paper on this topic FORBES Ross tells us in the *British Medical Journal* of October 13, 1900, that there is a hitherto undescribed physiological effect of potassium nitrate and potassium citrate given in combination as a nocturnal dose, which seems to him most interesting. If given to an elderly person, even one in good health, whose hair has gone white or nearly so, it will be noticed that at the end of a week or ten days the hair over the ears, the nape of the neck, and the beard, begins to resume its former color, which progresses all over the scalp, until the color is in great part restored, but streaked with gray. This he takes as his barometer, and so long as he can see this

condition setting in and continuing he feels confident of success. Whether it is due as much to improved circulation or returning vitality as the result of better nutrition and improved dietary may be debatable; but the fact remains that he has best seen it where the nitrates and citrates were also exhibited. Any one can prove this for himself. He would here raise a warning note concerning the use of such rapid and violent arterial dilatants as the nitrite of amyl and nitroglycerin, quite apart from their value in angina, and that is, that in cases of obstruction to the venous return from the portal system, as pressure in the abdomen from accumulated fluid, or obstruction of hepatic origin, where one may be tempted to use them to relieve recurrent cardiac embarrassment, there is a great tendency to the induction of fatal hemorrhage from the bowel. For the blood is packed into the abdominal arteries and capillaries, and being unable to pass the portal veins, first diarrhea, then capillary oozing, and finally a serious hemorrhage, take place. An attack of bleeding piles with persistent headache and constant vomiting, occurring when using these nitrites, are urgent indications for prompt discontinuation. The desired benefits can be more safely and completely brought about by calomel and a nitrate. He has never himself used a nitrite with the above results, though he has seen the same on several occasions elsewhere.

Bearing in mind the central nervous degenerations of the aged, it is well to follow the advice of Alexander Morison, and endeavor to deal with the neuro-muscular rather than merely the muscular factor of heart failure. With this end in view such medicines as the phosphates and hypophosphites of lime, soda, potash and iron, cod-liver oil, and bone-marrow for those who cannot take oil, will be found most useful. The researches of Chossat and Beneké showed that in those conditions where phosphatinuria was most constantly present the administration of phosphorus was decidedly beneficial—indeed, was imperative. That a large percentage of the ash—about seven per cent—of red blood-corpuscles is potassium phosphate is, he thinks, a significant matter. The sluggish reflexes of old age call for the aid of an excitomotor and excitoreflex drug. Strophanthus itself, though strongly a muscular convulsant, is markedly assisted in its action by such a drug. This drug is nux vomica *par excellence*. Nux vomica serves to initiate the muscular contraction which strophanthus makes more decided. To do this efficiently and continuously without using up the cardiac reserve necessitates a highly nutritious and easily assimilated dietary.

Mündinger cites cases of cardiac failure with dilatation occurring in persons doing hard and fatiguing work, and at the same time living on puddings and potatoes, with no meat food. This condition is technically spoken of as "Tübingen heart."

Old persons, with edentulous jaws, badly fitting false teeth due to alveolar absorption, are too often precluded from gaining the necessary carneous nutriment so vitally important in repairing the wear and tear of an already degenerated heart muscle. They take refuge in delusive "slops" and the futile cup or so of milk, and with their resistant peripheral circulation can be aptly likened to persons doing hard and fatiguing work on only "pudding and potatoes;" in other words, sooner or later "Tübingen heart" becomes the pressing condition. We then endeavor to combat the condition by ingeniously devised invalid dietary, based on the misconception that supposed easy digestibility is all that is necessary, and pay little or no attention to what ought to be the end and aim of such a dietary. We pin our faith to one or the other of our cardiac tonics, and are surprised when they do not succeed. It is a mere platitude to state that continuous and efficient muscular action can best be sustained on muscular tissue albumen. Milk is the natural food of the infant; the prominent feature of an infant is not muscularity; muscularity is a feature of the adult. Milk is not the only food of the adult as it is of the infant; muscularity is the sole feature of the heart, therefore milk ought not to be expected to replace essential muscular albuminous food. Casein of milk is not an iron-carrying hemoglobinous albumen, therefore ought not to be expected to usurp functions for which it was not intended, though it may otherwise be useful.

The problem here is to see that an aged patient taking a cardiac tonic also gets the wherewithal to renovate the cardiac machine. This is quite apart from the generation of muscular energy, which has its origin in the muscular burning off of fats and carbohydrates with the production of carbonic acid.

Mairet and Combemale found that the urea in the urine was markedly increased by strophanthus. Ross himself, having occasion to administer strophanthus to a patient suf-

fering from senile absorption of the center of his vertebra, and who was on a fixed diet, for the purpose of measuring the amount of urea per ounce excreted, noticed that while taking strophanthus the urea ran up 2 to 2½ grains per ounce — apart from the increase in volume of the urine excreted. The urea fell 2 to 2½ grains per ounce on withdrawing the strophanthus, though the amount of urine remained the same. This was an accidental observation, and led him to adopt the plan of increasing the myosin albumen in senile cases taking a cardiac tonic, with marked success in his results. The condition of the heart as shown by the irregular and intermittent action in most senile cases is merely a chronic condition which in muscle we know as fatigue, and recognize by its weak, irregular, and irritable action. It is well to bear in mind here the file-cutter's atrophy described by Allbutt, and other degenerative conditions rendering fatigue more likely. The condition, looked at from a dietetic point of view, is not so much a question of those foodstuffs utilized to produce the contraction, but rather those used to repair and renovate the wear and tear of the muscle producing the energy.

Fatigue is possible under all conditions in the presence of abundance of the former — the carbohydrates and fats — but wear and tear is only reparable by the latter — myosin albumen. So that the chronic condition known as irregularity and intermittence can and does become a condition of acute fatigue when the heart is driven by powerful alkaloidal stimulants with a dietary deficient in certain essentials, the heart here being driven practically to a standstill by overtaxation.

The heart, more than any other organ of the body, for obvious reasons, is peculiarly fitted for and able to effect almost instantaneous metabolic reparation even under stress of work, provided the material be of proper character and in sufficient quantity. The myosin is obtained from raw minced steak extracted by cold 0.5-per-cent sodium chloride solution and then curdled out. It is tasteless when so made, and can be put into a rice or custard pudding, into milk, or made into meat panada with egg and cream. He attaches no importance to stimulant beef teas or extracts containing only excretory extractives, as they tend to call out wear and tear which they are incapable of themselves repairing. The difficulty of gastric fermentation of starchy foods in senile cases is best met for the time being by malted foods such as extract of malt, alone or in combination with cod-liver oil, and, in the case of those who cannot take oil, in combination with bone-marrow. Mellin's food, cane-sugar in small quantity, and a limited amount of alcohol either as such or in an effervescent wine, will be found useful.

Many hearts which are regarded as worn out and are regretfully abandoned as too old to continue their function can indeed, comparatively speaking, be "made young again," and the helpless excuse of inability to provide a "new heart" may indeed be nearer refutation than is generally believed, under suitable dietary and a judicious course of continuous cardiac stimulation by tonics; endeavoring under certain limitations as it were to build up anew on the framework of the old, when treating heart failure in the aged.

SOME WORK BEARING UPON THE PREVENTIVE TREATMENT OF OXALATE OF LIME, GRAVEL, AND CALCIUM.

LINDLEY SCOTT states in the *British Medical Journal* of October 13, 1900, that there are a considerable number of people, sometimes children, but generally middle-aged subjects in good circumstances, who suffer from recurrent attacks of gravel, or who after outbursts of renal colic repeatedly pass small oxalate calculi. In such subjects the prolonged administration of small doses of magnesium, say forty grains of the sulphate given in the afternoon and at bedtime, in a well diluted solution or combined with some mild diuretic such as the citrate of potassium, would seem to be a suitable form of treatment. Attention to general health, regimen, and diet must also be kept well in view.

SUBCUTANEOUS INJECTION OF ALCOHOL IN SALINE SOLUTION.

The *Cincinnati Lancet-Clinic* of November 3, 1900, has in its pages an article by EASTMAN, of Indianapolis, in which he reminds us that it has been shown by Findley and others that the infusion of hot normal salt solution, notwithstanding the immediate effect is to stimulate blood-pressure and strengthen the heart, soon perceptibly lowers the body heat by promoting the excretions. Promotion of excretion is perhaps the main indication in the treatment of toxemias. Physiological salt solution dilutes the toxins of the blood

and favors their elimination by stimulating the excretory organs.

Findley states that in hemorrhage physiological salt solution maintains circulation by adding to the volume of the circulating blood, and that in cholera and cholera infantum it serves as a substitute for the lost serum. The salt solution, therefore, acts only by increasing the circulating fluid, giving to the heart a sufficient volume of blood to propel, and by promoting excretion, favoring the elimination of poisons.

Salt solution, even when given by subcutaneous infusion, is only secondarily a cardiac stimulant. If used hot, the direct cardiac stimulation of the heart will often be more than offset by the depression resulting from increased excretion. Heat beyond body temperature is of doubtful value, and may actually oppose the action of the saline solution. It may be concluded, then, that in most cases the physiological salt solution, to secure the best results, should be used conjointly with an approved heart stimulant. The heart stimulant may be supplied by adding alcohol to the solution to be infused.

Well matured whiskey is diluted with water in the proportion of one part to twenty, and the whole rendered physiologically saline by the addition of six-tenths of one per cent (or slightly less if we wish to follow Engel's teaching as to the normal salineness of the tissues) of sodium chloride. Martin and Hemmeter found that blood containing half per cent of alcohol always diminishes the heart work, and sometimes nearly destroys it, so that not enough blood is pumped out of the left ventricle to supply the coronary artery. These observations are, however, as Wood states, clearly in opposition to general experimental and clinical evidences.

Eagelton, Dogiel, and Costello produced marked increase of arterial pressure by small doses of alcohol, and a decline of pressure by large doses. Wood observes: "It would seem, therefore, that alcohol in small doses must be considered a direct stimulant to the heart; moreover, that alcohol in overdose is a direct depressant to the heart." If injected in the proportion mentioned there is little danger of overdosing. Clinically, in the writer's hands the salt solution containing whiskey has given more prompt and more certain results than the plain physiologic salt solution. The pulse was distinctly reduced in rate and increased in force by the use of the combination in a case of serious toxemia of fulminating appendicitis. Zimmerberg, who found that alcohol reduces both the rate and force of the pulse, doubtless used toxic doses.

In toxemias suggesting the use of normal salt infusions the addition of whiskey (maintaining the physiologic salineness) is certainly worthy of trial.

It should be borne in mind that any solution heated to 98.5° F. and poured into a fountain syringe bag will be much cooler by the time it has stood for several minutes in ordinary room atmosphere and traveled through several feet of tubing. Care must be taken, therefore, that the solution is actually injected at the body temperature, which means that allowance will be made for cooling.

It will be understood that it is not advised to administer alcohol by infusion except when the condition of the patient will not allow of its introduction by any of the common routes.

TREATMENT IN REGARD TO THE EFFECT OF ANESTHETICS.

SHUTER, in writing upon this subject in *Treatment* for October, 1900, tells us that ether should never be injected subcutaneously; it should always be given through a long hypodermic needle plunged deeply into a large muscle. He has several times seen extensive and painful sloughs of the skin of the forearm caused by the neglect of this precaution. It is true other drugs act in the same way, but for obvious reasons the accident is far more common with ether than with other injections.

Every collapsed patient should be given a large hot enema. Plain water answers almost as well as anything when time is a consideration; sometimes a little salt is added (a teaspoonful to the pint) with benefit, sometimes brandy, and sometimes milk; but the value and activity of the remedy is due to the quantity and warmth of the fluid rather than to any added ingredients, which, moreover, may have the disadvantage of making the enema more likely to be rejected. Children will retain six to eight ounces and adults a pint or more of hot water at a temperature of 110° F. without difficulty.

As a last resource it is permissible to give an intracardiac injection of strychnine with a long fine hypodermic needle. Shuter has seen several lives prolonged, and at least one life saved, by this means. It has also

been suggested that tracheotomy should be performed, and the lungs freely ventilated through the opening in the trachea by artificial respiration; but the utility of this proceeding is more than doubtful.

Amyl nitrite is much used in this condition of collapse, and is invariably carried by some anesthetists, who attach so much importance to it that they would not willingly be without it. For cyanosis oxygen has been given with good results; but to Shuter's mind this remedy tends to improve the patient's personal appearance rather than to benefit his general condition.

Ether and chloroform are themselves both good stimulants — they usually improve and steady the pulse; but of the two ether is much more active and powerful, and sooner exhausts the patient. The reaction and depression which follows anesthesia by this drug is greater than after chloroform, and will call for earlier treatment. It is better, therefore, to use chloroform when the patient is likely to be collapsed afterwards.

Among minor points that require treatment are cracked lips and nostrils and sore face, due to the local irritation of the anesthetic. They are easily cured by the application of some simple ointment, such as lanolin or cold cream.

Diarrhea readily responds to ordinary remedies; of these opium is best. Ether is now so seldom administered by the bowel that the severe dysenteric diarrhea, which sometimes follows the adoption of this method, is practically never seen, and need not be here noticed.

Not infrequently some alteration in the sense of taste and smell follows the use of anesthetics. This occurs more commonly after ether than after chloroform. Not only may the acuteness of one or both be much increased or decreased, but the sense may be entirely lost; in fact, so sensitive does the mucous membrane occasionally become, that Shuter has known a patient to declare that he has been poisoned with carbolic acid when he has simply swallowed a draught of water. The condition is more annoying to the patient than alarming to the surgeon, for it usually passes off in a few hours, and rarely persists for more than a few days. The most useful remedy is a mouth-wash of lemon juice and water, or the mouth may be swabbed out with myrrh, boroglyceride, or mel boracis.

Other temporary inconveniences that present themselves at times are squint (with the consequent diplopia) and deafness. They are both uncommon, and are both easily relieved — the first by covering one eye with a bandage, the latter by blowing up the Eustachian tube with Politzer's bag.

There is one other important complication which he mentions, although it encroaches on the realm of the surgeon. That is the accidental occlusion of the larynx or trachea by a foreign body. There is, of course, only one safe treatment, which should never be departed from, for foreign bodies in the larynx and bronchi. Should the surgeon suspect a foreign body, such as a tooth, a piece of rubber, or vomit in the larynx, trachea, or bronchi, he should perform laryngotomy or tracheotomy at once and without hesitation if he fail to remove it by other means.

TREATMENT OF PUERPERAL ECLAMPSIA.

KILLEBREW writes in the *Medical News* of November 3, 1900, that in puerperal eclampsia the question will arise as to whether bleeding should be practiced in all cases. He would say that all patients except those who are extremely anemic should be bled. The withdrawal of a portion of the blood from almost any of these patients will act beneficially if some other circulating fluid is introduced to remedy the loss. Unless this fluid is introduced to take the place of the blood withdrawn, undoubtedly it would be better to bleed only those patients who are very plethoric. In the very anemic it is better to introduce the normal salt solution without bleeding. The withdrawal of blood from these patients certainly removes some of the toxins from the system and makes room in the blood-vessels for the salt solution that is to be introduced. This salt solution dilutes the remaining blood and consequently the toxins contained therein. It acts as a circulating medium and stimulates the excretory organs.

In most of the cases of eclampsia that have been treated by the use of normal salt solution it has been administered either by hypodermoclysis or by enteroclysis. The latter method is entirely too slow to be depended on after the convulsions have begun. Intravenous injection is preferable to hypodermoclysis, because it is more certain and more rapid and is not more dangerous. If the patient is edematous and the circulation sluggish, the salt solution introduced beneath the skin will probably never be taken up by the lymphatics. There is practically no danger

in introducing the solution directly into the vein, and the results are certain and rapid.

The uterus should be emptied immediately. If the cervix is not fully dilated, or nearly so, it must be manually dilated as quickly as possible. If this is impossible on account of rigidity, recourse must be had to incisions as advised by Dührssen, which is not now the formidable operation it was before the technique of vaginal work was perfected.

The order in which these means should be employed is as they have been given: (1) Control convulsions with chloroform; (2) bleed the patient and give intravenous injection of normal salt solution; (3) empty the uterus.

Perhaps most operators empty the uterus before giving the infusion of normal salt solution. It frequently requires as much as two hours or even more to empty the uterus, while the infusion of normal salt solution can be given in a few minutes. In some cases the toxemia is so profound when the patient is seen that she will be dead by the time the uterus can be emptied. In these cases there is an almost complete absence of activity on the part of the excretory organs. It seems to Killebrew that it is better to give the intravenous infusion of salt solution first and allow it to be doing its work while the uterus is being emptied. He saw a patient a few months ago who died within four hours after the first convulsion. The physician in charge reached her two hours after they began. He first emptied the uterus. When this was accomplished life was almost extinct. Preparations were made at once to give an infusion of salt solution, but the patient died before the vein could be found.

He recalls another instance where the patient had seventeen convulsions during a few hours. The surgeon in charge at once gave an intravenous infusion of normal salt solution. No other treatment was given. The patient did not have another convulsion, and was perfectly conscious in a few hours. The uterus was emptied the next day. If the physician in charge of the first patient had given the infusion before he emptied the uterus the result might have been different. If there are enough assistants at hand both operations can go on at the same time, with great advantage to the patient's condition.

After these measures have been taken the colon should be thoroughly irrigated. If the convulsions recur and are mild, they should be controlled with chloral given in an enema. Should they again become severe another infusion of normal salt solution should be given. This will rarely be necessary. During convalescence the patient should be confined to bed and the bowels and other excretory organs kept active. The diet should be restricted to liquids for a week and then gradually increased as the physician thinks best. A high saline enema should be given twice daily. All excitement, worry, and depressing influences are to be avoided. Callers should not be allowed, and the nurse should make special efforts to keep the patient in a buoyant frame of mind.

Veratrum viride and chloral have given good results in the practice of many physicians. Killebrew has not had any experience with the former. The latter will control convulsions in many cases, but it does so more by diminishing the excitability of the nerve centers than by removing the causes of the convulsions, although it probably causes some increase in the secretion of urine. Practically the same may be said of veratrum viride. Pilocarpine is dangerous because of the marked depression on the heart, and its use is never justified in this disease. Morphine undoubtedly has some temporary effect upon the convulsions, but it should never be used. Like chloral, it unquestionably has a quieting action on the nerve centers, but its effects on the various secretions are important and not to be underestimated. Instead of assisting in the removal of the causes of the convulsions, it retards it by paralyzing all the excretory organs, with the possible exception of the skin.

That all methods of treatment heretofore applied in this disease have been unsatisfactory is evidenced by the fact that the mortality has been about twenty-five per cent. Certainly this is sufficient evidence to show that there is room for improvement. Statistics based on the method of treatment given in this article are not large enough to form a very correct idea as to its efficiency, but it is a rational, common-sense method of procedure, and offers a hope of better results in the future, especially when improvements in technique have been thoroughly worked out.

THE HARVEIAN ORATION ON TRANSFUSION.

ANNANDALE contributes this oration to the *Scottish Medical and Surgical Journal* for September, 1900. The conclusions he has come to in regard to transfusion are these:

1. That it may be a valuable aid in saving life in the case of patients suffering from serious loss of blood, provided they show no signs of reaction after the ordinary means have been carefully tried.

2. That the best form of transfusion for ordinary use is the injection of human blood mixed with a solution of phosphate of sodium and kept at a proper temperature, so as to prevent clotting.

3. That if the former method cannot be properly carried out, the injection into a vein of saline solution (chloride of sodium) is the next best procedure.

Annandale needs scarcely say that both of these procedures must be carried out with the most strict and careful antiseptic precautions.

4. That intraperitoneal injections of warm water, or by warm saline solutions, are most likely to be useful in cases where the abdomen has already been opened, for without an opening there is always risk of injuring the intestines or other internal organs with the trocar and cannula.

5. That injection of warm water, or of warm saline solutions into the rectum, or into the cellular tissues, is a safe and simple procedure, which may be usefully employed in any sudden emergency.

THE PHARMACOLOGY OF THE JABORANDI ALKALOIDS.

MARSHALL states in the *British Medical Journal* of October 13, 1900, that until recently three alkaloids were supposed to exist in jaborandi leaves — pilocarpine, pilocarpidine, and jaborine. Pilocarpine exerts a stimulating influence on the nerve terminations of involuntary muscle and most secreting glands; pilocarpidine was believed to produce a similar but somewhat weaker effect; while jaborine was said to antagonize these substances. The last named compound was isolated by Harnack and Meyer; they did not obtain it in a pure form, although they state that in constitution it is closely allied to pilocarpine. Jowett has been unable to isolate any such body, and from the crude products he sent Dr. Marshall he has failed to obtain any atropine effect. As Harnack and Meyer undoubtedly obtained an atropine action, he is at present unable to explain their results, but criticism he leaves until his own experiments are published in detail.

From different specimens of jaborandi leaves, Jowett has isolated pilocarpine and a small amount of an isomeric alkaloid, isopilocarpine, and from true jaborandi leaves a small quantity of pilocarpidine. Jaborine has been carefully looked for, but without success. The substances submitted to Marshall as possibly containing this body invariably turned out to be mixtures of pilocarpine and isopilocarpine with some resinous substance. And this seems to be the composition of the jaborine sent out by Merck; it gives a weak pilocarpine effect, no atropine action.

As both pilocarpine and atropine affect the same structures—certain nerve terminations, or what we may regard as such—in various parts of the body, it is evident that a comparative investigation of such substances might be carried out in a variety of ways. Marshall has chosen their influence on the heart as being the simplest and, he thinks, the most exact. These results were controlled by observations on the excretion of saliva, and by experiments with minimal dose on himself. The animals used were rabbits and cats. Both were anesthetized with chloroform before the operation was commenced. In both the blood-pressure was taken from the right carotid artery, and the injection cannula tied into one of the right facial veins, so that its mouth projected into the external jugular vein. Sometimes one vagus, sometimes both vagi, were ligatured and cut. After obtaining a constant vagus effect, a solution of the drug was injected and the vagus again stimulated.

After the injection of pilocarpine the heart-beats became slower and the blood-pressure fell, and after a short but variable interval both gradually returned to normal, the blood-pressure sometimes slightly beyond it. During the rise of the blood-pressure the vagus was generally less irritable, but on reaching its normal height it became, for a short time, slightly more sensitive. This effect is produced by an injection of one-half to one cubic centimeter of a 1-in-5000 pilocarpine solution; such a dose also produces distinct salivation. After still larger doses the heart is stopped permanently and the respiration is paralyzed. By careful gradation of the dose, however, the vagus terminations may be paralyzed, and then large doses can be given without much effect upon the heart.

Isopilocarpine produces a similar but much weaker effect to pilocarpine. In the rabbit its action on the heart seems to be compara-

tively less powerful than its influence on the salivary glands, but in cats and man this is not so obviously the case. Roughly, we may place its activity as one-eighth to one-tenth that of pilocarpine.

Pilocarpidine is very slightly active; it may almost be said to be inactive. Solutions of 1 in 200 injected into the circulation cause a slight fall of blood-pressure, and in cats slight salivation.

In all experiments the nitrates of the alkaloids were employed, but in all cases the dose is given as pure alkaloid. In the experiments on himself the substances dissolved in water were taken by the mouth. His endeavor was to obtain the least dose causing salivation and perspiration, and under the conditions of the experiment this was obtained by pilocarpine 0.005 gramme, isopilocarpine 0.04 gramme, jaborine (Merck) 0.09 gramme. Pilocarpidine 0.38 gramme (4 grains) did not produce distinct salivation or sweating, but it caused slight nausea. It may also be said that the resin of jaborandi in doses of two grammes (31 grains) is inactive.

INFUSION OF NORMAL SALT SOLUTION IN DISEASE.

HAYNES tells us in the *Southern California Practitioner* for October, 1900, that since the middle of the seventeenth century many substances other than remedies used hypodermically have been injected into the circulation in the treatment of acute anemia from hemorrhage, shock, septicemia, uremia, comatose state in diabetes mellitus, and the toxemias of infectious fevers.

Blood direct from donor to patient, blood defibrinated, blood mixed with liquor ammonia, blood mixed with sulphate of potassium and in varying quantities with saline solutions, milk and saline solutions, the latter varied in number and amount of ingredients, but all based upon the normal blood serum, have at different times been used.

There are certain physicians of large experience who add other salines to the normal salt solution.

In cholera Dr. H. A. Hare, of Philadelphia, believes the ideal solution to be:

Calcium chloride, 0.25 gramme;
Potassium chloride, 0.1 gramme;
Sodium chloride, 9 grammes;
Sterilized water, c. m., 100 grammes.

Professor Hayem, the French clinician, uses:

Sodium sulphate, 10 grammes;
Sodium chloride, 5 grammes;
Distilled water, c. m., 1000 grammes.

Dr. Heyse, of Hamburg, adds 1¾ drachms of alcohol to one quart of normal salt solution.

Dr. Gaillard, of Havre, adds 2½ drachms of sulphate of sodium to one quart normal salt solution.

Dr. W. W. Johnson, Washington, D. C., uses forty-five grains each of hyposulphite of soda and carbonate of soda, and one drachm of the chloride to one quart of water.

Dr. Nicholas Durantz uses:

Chloride of sodium, 5 grammes;
Hydrate of sodium, 1 gramme;
Sulphate of sodium, 2.5 grammes;
Water, c. m., 1000 grammes.

Dr. Linns uses:

Sodium chloride, 40 grains;
Sulphate sodium, 2¼ drachms;
Distilled water, 1 pint.

In pneumonia Dr. Pellegrene uses:

One-per-cent solution of chloride of sodium;
Half of one-per-cent of bicarbonate of soda.

Dr. Galvanzi, of Modena, claims to be universally successful with a mixture of:

Sodium chloride, 0.75 gramme;
Sodium bicarbonate, 0.50 gramme;
Water, 6½ fluidounces.

In diabetic coma Dr. Herzog, of Berlin, uses from three to five per cent of bicarbonate of soda or chloride of sodium.

Dr. Dickinson, of London, uses a solution of sodium chloride, potassium chloride, sodium phosphate, sodium sulphate, and sodium bicarbonate.

Dr. Lepine uses:

Sodium chloride, 1 drachm;
Sodium bicarbonate, 2½ drachms;
Water, 1 quart.

But thousands of experiments upon human beings and upon animals by hundreds of experimenters have proven most conclusively that for efficiency, freedom from danger, and ease of administration the subcutaneous injection of normal salt solution (hypodermoclysis), six drachms of sterilized salt to one gallon sterilized water, at a temperature of from 110° to 120° F., excels any and all things that have ever been used to relieve

those suffering from shock and from the effects of hemorrhage, and as an eliminant in septic and toxic conditions.

When life is almost extinct and the patient's vitality so low that the probability of absorption from the subcutaneous spaces is slight, or where the tissues are edematous, then the solution should be injected into a vein, although the dangers of injection of air, too rapid distention of heart, phlebitis, thrombosis, and embolism should always be borne in mind.

THE TREATMENT OF GOUTY ECZEMA.

MARTYN states his views as to this point in the *British Medical Journal* of October 13, 1900. He speaks, first, in regard to the clothing of a patient subject to attacks of eczema. The object to be obtained is the production of a healthy action of the skin and the avoidance of extreme loss of heat from sudden chilling of the surface; while, at the same time, irritation is kept at a minimum. This is one of the most essential points in the treatment of gout and gouty eczema. As little change as possible should be made in the winter and summer clothing, and such change should be confined to the outer coverings. The underclothing must not be varied. Wool, if it can be borne, is good, but has many disadvantages; it is apt mechanically to irritate the skin. Washing and sweating produce in it a change of texture, rendering it felt-like. In this condition it absorbs the sweat instead of allowing the moisture-laden hot air to slowly escape without entirely condensing. This, of course, applies more especially in hot weather, and when exercise is taken in cold weather. The wet clothing cools and produces a serious chilling of the surface, and the acrid sweat, unable to escape or be absorbed, reacts on the skin and produces irritation, and finally eczema. A more rational form of underclothing is undoubtedly cotton in the cellular woven form. Such a clothing allows of a certain amount of ventilation of the skin, while at the same time it protects against undue chilling; he has repeatedly found that patients who cannot tolerate wool next to the skin wear cotton with comfort and benefit. One very essential point in the clothing is the protection of the extremities. Gouty subjects are extremely prone to peripheral stasis of circulation, evinced by cold, blue hands and toes, probably accounting for the irregular nutrition of the nails, the palmar discoloration of the hands, the chilblains, the early alopecia, and all these symptoms of epithelial degeneration. Hence, vests should have long sleeves, mittens or gloves should be worn out-of-doors, and warm socks, with spats over the boots in winter. The success of treatment depends on such minutiæ.

Climate in gouty eczema is of great importance. Of all localities the sea is the worst—as, indeed, it is in all forms of gout. Martyn believes this to be partly due to the fact that the action of the liver is deranged, partly due to the presence of sodium chloride in the air, and partly to the sudden daily changes of temperature produced by the land and sea breezes in the morning and evening. The best climate is an equable, fairly bracing one where the action of the skin will not be suddenly interfered with—such a climate, in short, as is difficult to be found in England.

As regards the diet of a patient suffering from or liable to gouty eczema, it is not necessary to detail here the pros and cons of each article of food in gout. Suffice it to say that the diet must be a typical gouty diet with the minimum proteid and starchy foods, and all those articles which produce an acid fermentation. There are, however, some forms of food which in eczema are particularly irritating, and which must be altogether withheld. First and foremost is alcohol; then all forms of raw or cooked fruit containing much fermentable sugar or acid, especially strawberries, gooseberries, apples, lemons, and rhubarb. All stimulating foods should be avoided. The patient himself is the best judge of many articles of diet, as those injurious will never fail to make the burning and itching worse.

Next, as regards the value of internal remedies in gouty eczema. The text-book statement on this point usually is that those drugs which are used as gout specifics, such as colchicum, lithia, or piperazine, should be given. Personally, Martyn has never seen them have the slightest influence in controlling or curing the eczema. Of real value are those drugs which benefit dyspepsia and increase the alkalinity of the blood, such as bismuth, the alkalies, and the bromides. Antimony will at times relieve the intense itching, but when the patient is kept awake and tortured by the eczema, when the temptation to scratch or rub is too strong to be resisted, and when there is no strong contraindication, morphine should be injected hypodermically. By so doing we secure a peaceful night, and

place a moist acute eczema under the most favorable conditions for healing. Arsenic is a difficult weapon to handle. Roughly speaking, the less irritation there is, and the more the eczema inclines to the dry and scaly type, the more will arsenic be found of value. The daily use of some mineral aperient water, such as Carlsbad water, taken in the morning when fasting, should never be omitted.

More important than the internal medication is the local treatment of the eczema. For the very acute moist inflammatory type soothing lotions containing lead and opium should be constantly applied. As soon as the irritation begins to disappear, and the exudation to lessen, Martyn always substitutes a dusting powder of carbonate of magnesium and fuller's earth. For the dry, irritable type, he finds nothing excels the old-fashioned tar in the form of the liquor carbonis detergens, and it should be used in a very diluted form as an ointment, ten minims of the liquor to an ounce of lanolin. The great area of the body which eczema so often occupies renders the employment of lotions and ointments difficult, and it is in these cases that the employment of baths is so valuable. The time-honored tradition that all eczema is to be kept religiously from water is still fostered by many patients, and it is one of the hardest points to decide whether an eczema will be made better or worse by immersion in a bath. His experience teaches him that the amount of irritation is not the criterion of this point. Intensely itching eczema is frequently soothed and ultimately healed by such treatment. But when there is much redness or inflammation or exudation, baths only serve to make matters worse. A lime sulphated water, like the Bath water, is admirably adapted for cases of dry, irritating, scaly eczema. Too much care cannot be taken over the detail of the bath. This should never be given at a temperature exceeding 98°, and the usual hot pack after the bath must be omitted. The whole body must be very carefully dried and powdered after the bath, and the patient must go straight home after thoroughly cooling, so as to avoid any chill to the surface. In the more obdurate chronic types he orders the addition to the Bath mineral water of sulphur water prepared by boiling sulphur and slaked lime.

This is by far the best preparation of sulphur to use, as it closely resembles the natural sulphur springs. It is easily made, and will keep for a considerable time if it be kept cool and the air excluded.

One word as to the treatment of gouty eczema in the aged. For them severe treatment, such as baths and rigorous dieting, is out of the question, and yet they more especially require soothing treatment, or their strength soon gets exhausted by sleepless nights and days of torment. The treatment must, as a rule, be simply palliative. A generous diet with a small amount of stimulant is necessary when the patient gets worn out. Daily sponging with warm sulphur water is of the greatest value, and the free use of a dusting powder after drying. Sleep must be procured, if necessary with bromides.

SOME NOTES ON THE TREATMENT OF RHEUMATISM.

A. STENGEL writes in the *Medical News* of December 22, 1900, of his use of various drugs in this disease. He begins by stating the generally accepted fact that of the drugs that have been used in the treatment of rheumatism, the derivatives of salicylic acid deservedly occupy the first place in professional estimation. Salicylic acid is not, as far as we know, a specific. In many cases it fails entirely; in a greater number it is beneficial in relieving pain and other symptoms, but fails to give complete relief; in some cases its action is so immediate and final that the term specific seems almost justified. How much this difference in action of the drug depends upon etiologic differences in particular cases is unknown. The possibility of such an explanation of the failure or success of the treatment cannot, however, be denied. Dr. Stengel then recalls an experience in a case of rheumatic pleurisy in which the fluid in the chest disappeared with remarkable rapidity after the administration of salicylate of soda, and of other less striking but suggestive results under similar circumstances. The efficiency of the drug in rheumatic pleural effusions has been too frequently observed to permit the belief that the results have been mere coincidents; and the rapidity and thoroughness of action indicate a relationship of the drug to the disease or some cases of the disease that warrants a place near to the remedies we term specifics. One is reminded of the action of potassium iodide in actinomycosis, or of arsenic in leukemia and pernicious anemia.

If, however, the salicylic acid preparations

are not specific, they at least relieve pain and suffering in a majority of cases, and thereby benefit the patient's general condition. This is doubtless advantageous to the end of helping the combat on the side of the systemic resistance to the infection. Of the preparations of salicylic acid Stengel says little, but refers especially to the external applications of one form, the salicylate of methyl or oil of wintergreen. The sodium salt is probably most frequently employed for internal use, and, excepting in rare instances when some other form is more acceptable to the stomach, proves satisfactory if the internal administration of salicylates is likely to be beneficial in any form. The Germans advise large doses, and though these may cause toxic symptoms, he has found them more satisfactory than small doses spread over a longer time. If salicylic acid is likely to prove useful, it will do so in a comparatively short time. The administration of a dose of ten grains of the sodium salt three times daily does not suffice. When this plan has been used the drug has relieved pain scarcely at all, and has had no appreciable effect on the course of the disease. From 100 to 150 grains should be given in twenty-four hours for two or three days if symptoms of salicylism have not appeared; after that period the dose may be reduced one-half, and after one week's treatment the drug may often be discontinued. Persistent use of the remedy undoubtedly causes depression and other complications. The same general principles apply to the internal use of oil of gaultheria, salicin, ammonium, strontium salicylate, etc.

The simultaneous or separate use of salicylate of methyl, applied to the skin in the form of a ten- or twenty-per-cent ointment and covered with lint and oiled silk, is extremely satisfactory. Dr. Stengel has repeatedly tested the pain-allaying power of such local treatment, comparing it with simultaneous applications of lead-water and laudanum, Fuller's lotion, and the like. Invariably the ointment has given the greater relief, and the systemic action of the drug was undoubtedly exercised, as abundance of salicyluric acid in the urine indicated the absorption of the drug.

The relief of pain secured by the internal and external use of salicylates is beneficial in several ways, the chief of which is that such freedom from pain causes rest of the diseased parts by relaxing muscular spasm, and at the same time improves the general condition of the patient. Some rest may, however, be obtained in another and better way, viz., by the use of splint or plaster casts. For several years past Stengel has treated cases of acute rheumatism in this way. His first experiences were with cases of gonorrheal rheumatism, but more recently he has practiced plaster fixation in cases of ordinary polyarticular rheumatism. The plaster cast almost invariably relieves pain by reducing the muscular spasm and securing immobility, and its application is generally followed by rapid subsidence of the local signs of inflammation. The process of applying the cast has never been so painful to the patient that it had to be abandoned, there has never been any increase of swelling after its application, and it has not, therefore, been necessary in any case to remove it on account of pressure. On the contrary, it has often happened that a new cast was needed in two or three days on account of the reduction in the size of the joint.

In very acute inflammatory cases Stengel has in the beginning covered the joint with lint on which salicylate of methyl ointment was spread, and has then fixed the part with a light cast, removing this in twenty-four or forty-eight hours. The ointment may cause irritation if it is allowed to remain too long in close apposition with the skin. In a few instances of rather subacute character it has proved useful to cut the cast so that daily dressings might be applied to the joint. In none of his cases has it been necessary to continue fixation so long that there has been any danger of ankylosis. As soon as the inflammation has measurably subsided it is advisable to discontinue the cast, and in but few instances has the condition relapsed so as to require reapplication of the plaster dressing. Occasionally he has allowed the cast to remain for considerable periods, removing it from time to time to examine the joint or practice gentle manipulations.

THE TREATMENT OF BRONCHITIS IN INFANTS AND YOUNG CHILDREN.

S. S. ADAMS states in the *Medical News* of December 22, 1900, that attempts to abort bronchitis by a hot foot-bath, free purging, and profuse sweating are seldom successful. Such measures may prove injurious unless extra precautions are taken to prevent the child from taking additional "cold" by kicking off the bed-coverings.

Local measures when judiciously applied are often beneficial. Poultices are objec-

tionable because they must be renewed so frequently that the child's rest is disturbed. The effect of the poultice is derived from a chest-jacket of cotton covered with cheese-cloth or oiled silk. In many cases, especially where the heart's action is feeble, counter-irritants applied to the chest relieve pulmonary congestion. The turpentine stupe, or, as many prefer, the weak mustard paste, may be placed under the jacket until the skin becomes sufficiently irritated, when it should be removed; it may be reapplied every six or eight hours. Blistering is never necessary.

Inhalations of water or medicated vapors are valuable in relieving the embarrassed respiration by softening the thick bronchial secretion and applying the medicament to the inflamed part. For infants and very young children this can be accomplished best by placing them under a tent, into which the steam from a boiling kettle can be conducted. Older children will inhale the vapors from any one of the many inhalers offered for sale in the drug stores. When neither of these methods is practicable the air of the room can be saturated with moisture by having a kettle or pan of water constantly boiling near the child's bed. The following medicaments may be vaporized: Tincture of benzoin (compound), eucalyptol, carbolic acid, creosote, turpentine, and terebene. Direct inhalation should last about ten minutes every hour or two; indirect (*i. e.*, through atmosphere of the room) vaporization may be kept up until the atmosphere of the apartment is saturated with the medicament.

Expectorants are not well borne by infants, and much care should be exercised in their selection. In the dry stage of bronchitis small doses of ammonium iodide in an agreeable menstruum, to which a few drops of syrup of ipecac are occasionally added, will usually hasten the secretion, thus relieving the swelling of the mucous membrane, rendering the cough less painful, and lessening the frequency of respiration. In older children the same drugs in larger doses are beneficial. When the secretion becomes very profuse, the syrup of hydriodic acid is valuable.

Opiates of every description should be withheld as long as possible from infants; but when the cough is harassing and the sleep disturbed, small doses of codeine or a few drops of paregoric every two hours, for a few doses only, are justifiable. The older child is often benefited by a small dose of Dover's powder, or codeine added to a palatable mixture. The practice of adding some form of opium to every so-called "cough mixture," regardless of the age of the child, is fraught with much danger. We can relieve or stop the cough, but by so doing we destroy one of nature's safeguards by which the secretions are removed and the engorged bronchioles freed.

Emetics are seldom indicated, unless the exudate is so profuse or the stomach so distended with gas from undigested food as to embarrass respiration. In the very young and feeble either of these conditions may be promptly overcome by an emetic of the syrup or wine of ipecac, which is seldom attended by depressing effects.

Cardiac stimulants are required in most severe cases, especially in the feeble. Alcohol in some form is the best and is well borne by children. In cases in which the heart does not seem strong enough to overcome the intrathoracic engorgement, a valuable adjuvant will be found in nitroglycerin, which is found most effective when administered hypodermically. While it is injudicious to begin stimulation too early, it would be equally so to delay it until the heart is too debilitated to respond to the strongest stimulants. In bronchitis, or in pneumonia, the heart's action should be jealously guarded.

Respiratory stimulants of strychnine and atropine are required in a very small percentage of cases. They may bridge over the crisis, but should be watched by the physician, and never entrusted to the discretion of either nurse or layman.

Severe attacks of dyspnea and feeble respirations must be promptly met. The passive pulmonary congestion and the overfilled right heart must be relieved, and the compressed and empty air vesicles reinflated. All of these indications may be fulfilled by Jacobi's plan of flagellation or spanking, which serves the twofold purpose of causing the infant to cry, which induces full, deep inspirations distending the air vesicles, and reddening the surface, which attracts the blood from the distended intrathoracic blood-vessels. The same results may be obtained by H. C. Wood's method of alternate hot and cold douches to the chest. Much less heroic, and probably quite as effective as either of these methods, is the general hot bath (110° to 120° F.); mustard may be added to the water. Oxygen by inhalation may mitigate the feeling of suffocation, but the relief is only temporary.

THE TREATMENT OF LARYNGEAL TUBERCULOSIS.

The *Medical Record* of December 22, 1900, contains an article by COHN, of San Francisco, on this topic. He reminds us that in 1885 the Vienna surgeon Mosetig recommended lactic acid in tuberculous affections of the knee. Impelled by Mosetig's success attendant upon the use of the acid, Krause, struck by a fortunate inspiration, in that same year made a trial of the remedy in the throat. He began to cauterize the tuberculous ulcers with lactic acid, and with success exceeding anticipations. His reports were so glowing that a large number of laryngologists immediately availed themselves of the method, with results equally good, and from that day to this lactic acid has remained by far the most efficacious remedy in laryngeal phthisis. As Schech says: "It acts almost specifically in that, while it attacks the morbid tissue, it leaves the healthy tissue intact." If any agent can bring about the cicatrization of a tuberculous throat ulcer, it is this acid. Its employment is limited, however, to open processes—that is, to ulcerated surfaces—and does not extend to non-ulcerated infiltrations, for if the surface be intact it cannot penetrate to the morbid tissue underneath. Moreover, the method of application must be rational. The treatment of tuberculous ulcers with twenty- to thirty-per-cent lactic acid, as often practiced, is unavailing, as that concentration is too weak to accomplish the purpose intended. One must use a fifty- to eighty-per-cent solution, which must be rubbed so energetically into the ulcer that a brownish or blackish eschar results. For this reason Dr. Cohn agrees with Lennox Browne in thinking the advocacy of application by means of the laryngeal spray ill advised. Some apply the acid daily or every second day; this is an entirely irrational procedure. The application should not be repeated until the eschar sloughs through reactive irritation—a process requiring from seven to fourteen days. In the meantime, insufflations of iodol, iodoform, or another disinfecting powder are in place. Preceding every cauterization a thorough cocainization is necessary, a fifteen- to twenty-per-cent solution being the strength generally required. On the detachment of the eschar the surface is smooth, the superficial granulations having been actually destroyed by cauterization. The chief deposits, however, are still below, and the cauterizing procedure must therefore be repeated four or five or a dozen times, often through many months, before we can hope to have entirely eliminated the morbid tissue.

And yet it is not permissible in every case in which there are tuberculous ulcers in the larynx to apply lactic acid without further consideration. In this Bosworth goes too far, in Cohn's estimation, in stating that "in view of the excellent results which have followed the lactic acid treatment, we have not done our full duty in any given case without fully testing its efficacy." Several strict indications must first be fulfilled. In the first place, the ulcers must be circumscribed. If, for instance, the posterior wall, both vocal cords, and one or both arytenoid cartilages be already ulcerated, lactic acid is strictly forbidden, for such ulcers do not heal, even with lactic acid. One ulcerated vocal cord or an ulcerated posterior wall has a fair chance of healing; these additional ulcers have practically none whatever. In the second place, the general condition must be good. If the pulmonary process be already far advanced or advancing rapidly, if the appetite be poor, or if the patient does not tolerate cocaine, cauterization should not be undertaken. If the patient's appetite be ruined with cocaine, the greatest harm is done for him, for as long as the tuberculous subject's appetite remains good, there is always hope of eradicating the disease, or at least of checking its progress. So much for tuberculous ulcerations. Dr. Cohn repeats that lactic acid is the sovereign remedy in their treatment; that, as J. Solis Cohen says, there is nothing else which bears comparison with it; that it acts almost specifically; and that if the above mentioned indications be fulfilled, its use is imperative.

We now come to the tuberculous infiltrations. After the introduction of lactic acid in the treatment of tuberculous ulcers, Heryng hit upon the idea of treating tuberculous infiltrations by the same means, cauterization being preceded by multiple scarifications. The object of these was to convert the non ulcerated infiltration into an open process, into which the acid could then be rubbed. Although diminution in size of the infiltration and cicatrization of the wound frequently followed, Heryng soon saw the inadequacy of the procedure, and devised in 1887 the method upon which the entire present surgical treatment of laryngeal phthisis is based, and that is curettage. The single curette is an oval sharp spoon, the curve of which is adapted to the various

regions of the larynx. With it the tuberculous infiltrations are thoroughly scraped with the intention of eliminating the tuberculous products and leaving a wound which later cicatrizes. There are, however, certain parts of the larynx to which, on account of their lack of tenseness, we cannot apply the single curette; these are the epiglottis, the aryepiglottic folds, and the posterior wall. For these parts we use the double curette; it acts, moreover, more energetically than the single curette, and is therefore adapted to those infiltrations, irrespective of their localization, which by reason of their hardness do not yield to the single curette. It is needless to add that before the employment of the curette the larynx must be thoroughly cocainized, for which purpose, as in the application of lactic acid, a fifteen- to twenty-per-cent solution is necessary. On account of the sensitiveness and the excessive reflex irritability of the posterior wall, this region is the most difficult to manage. With the single curette hemorrhage is slight, with the double curette more profuse. This danger is, however, not very great. In case of trouble a mixture of lactic acid and liquor ferri sesquichloridi in equal parts will be found serviceable. After the operation insufflations of iodoform, iodol, aristol, or a similar disinfecting powder, are all that is necessary. The reaction is slight; at worst the patient complains of rawness in the throat and painful deglutition, sometimes of headache and slight fever. As some one has said, many stand the operation better than the cocaine. In general seven to fourteen days must elapse before the operative procedure is repeated. As to the indications for curettage, they are the same as for cauterization with lactic acid, only that in the case of curettage they are, if anything, still stricter.

In conclusion Dr. Cohn gives a brief recapitulation, and divides laryngeal tuberculosis as regards its therapeutics into three stages. In the first stage, with the exception of a circumscribed infiltration or ulceration, the larynx is healthy. In this stage (the only one in which we can hope for a permanent cure) the treatment consists in curettage in case an infiltration be present, in cauterization with lactic acid in case an ulcer be present. If the general condition, especially that of the lungs, be good, these procedures are imperative. As above stated, they must be repeated at intervals of one to three weeks until the diseased tissue is completely removed.

In the second stage the larynx presents extensive infiltrations or ulcerations. Here we can no longer hope for a complete elimination of the morbid tissue; in other words, if we get the case in this stage we can no longer count on a cure. Here the antiseptic treatment comes to the front, for our main aim is to prevent secondary infection. The mildest method is by means of antiseptic inhalations; whether we use one- to three-per-cent carbolic acid, two- to four-per-cent boracic acid, or one- to two-per-cent of lysol is of no consequence. If the epiglottis will permit an inspection of the interior of the larynx the antiseptic swab is still more efficacious, for which a ten-per-cent solution of carbolic acid in glycerin can be recommended. More in favor than this is a ten- to thirty-per-cent solution of menthol in olive oil, which acts both antiseptically and analgetically. As above outlined, by means of this antiseptic treatment we forestall secondary infection and thereby the terrible dyspnea and dysphagia of the last stage.

And, finally, if we see the case first in this last pitiful stage all that it is in our power to do is to treat it symptomatically, to administer a morphine powder before each meal, or better still to apply a ten- to twenty-per-cent solution of cocaine to the pharynx. In impending suffocation tracheotomy must, of course, be performed.

A PLEA FOR LARGER DOSES OF ANTITOXIN IN THE TREATMENT OF DIPHTHERIA.

McCollom, of Boston, writes in the *Boston Medical and Surgical Journal* of December 25, 1900, with the object of urging the better use of antitoxin in treating diphtheria. After giving many interesting facts he concludes by saying that many cases might be cited in which large doses of antitoxin were given with satisfactory results, but enough has been said to prove that small doses of antitoxin are of little avail in the treatment of grave types of the disease; that in order to obtain the best results the serum must be heroically administered. It is true that all of the patients to whom large doses of antitoxin have been given have not recovered, but so many have that one must be convinced that larger doses are imperatively demanded in very severe cases. When death has occurred, it has been from nerve degeneration or from sepsis. In no instance was there any injurious effect produced by either

the large or small doses of antitoxin. Albuminuria, although present in many cases, cannot be attributed to the serum, as albuminuria is one of the most frequent symptoms in diphtheria. Heart complications of a serious nature have not been so frequent in the 7657 patients treated at the South Department as would have been the case in a like number treated without antitoxin. Paralysis, although occurring in the severer cases, has not been so prominent as it would have been in an equal number of cases treated without antitoxin. Urticaria and arthralgia are certainly very annoying complications, but they do not imperil the life of the patient, and are therefore not worthy of being considered an argument against the use of the serum. It has been observed that the serum from certain horses caused a larger percentage of urticaria than that from others. There is no explanation of this fact. It is to be hoped that in the future there may be some way of eliminating this troublesome symptom. The time in which an urticaria may appear varies from ten minutes after the injection of antitoxin to three weeks. Abscesses after the injection should be of rare occurrence, and when they do appear are an indication of some error of technique in the sterilization of the syringe or in the quality of the serum. In the last 15,000 injections given at the South Department, an abscess occurred twice.

It must be conceded that diphtheria at the outset is a local disease caused by the bacillus of diphtheria. The constitutional symptoms are the result of the extension of membrane and the formation of toxin. If the local process can be stopped, if the membrane can be prevented from extending, the life of the patient will be saved. Although different remedies were used to prevent the extension of membrane before the advent of the antitoxin, the death-rate from diphtheria remained about the same until the introduction of antitoxin. Before the days of antitoxin there was no method of limiting the extension of the membrane. It is true that the membrane could be torn off, leaving a raw surface, but the organism of diphtheria would not be destroyed, and therefore the membrane would reform. The number of different applications to the diphtheritic membrane was so great as to prove that no one of them was satisfactory. No germicide can be of sufficient strength to effectually destroy the bacilli of diphtheria without causing destruction of the mucous membrane, and thus opening a fresh field for the growth of the organism. In the light of our present knowledge regarding the etiology of diphtheria, there can be no more unscientific method of treating the disease than by the application of caustics to the membrane, with the hope of destroying it. The experiments of Roux and Yersin proved conclusively that the bacilli of diphtheria would not grow on intact mucous membrane, and, therefore, the less the throat of a patient ill with diphtheria is abraded the better.

Of the 5657 cases of diphtheria treated in the five years that the South Department in Boston has been open, 772, or 10.08 per cent, required operative interference. In about one hundred instances there were marked laryngeal symptoms, but operative interference was not required, the stenosis being relieved by antitoxin. The use of steam for the relief of the stenosis has been discarded except in cases of tracheotomy, because it was found that the relief was not sufficient to offset the debilitating effects of the steam on the patients. The sublimation of calomel was tried in many cases, but without satisfactory results, as the patients almost invariably required operation. To discuss the relative advantages of intubation as compared with tracheotomy would prolong this paper to an unseemly length, but a death-rate of thirty-four per cent in intubation cases as compared with the death-rate reported in tracheotomy cases shows conclusively the advantage of intubation over tracheotomy.

From a comparison of the health reports of Boston before and after the introduction of the antidiphtheritic serum, from a comparison of the health reports of other cities, from a study of hospital reports, from a clinical observation of nearly 8000 cases of diphtheria, the following conclusions are justifiable:

1. That the ratio of mortality of diphtheria per 10,000 of the living was very high in Boston previous to 1895.

2. That the ratio of mortality per 10,000 has been very materially reduced since the introduction of antitoxin.

3. That the percentage of mortality in the South Department is lower than that of any of the hospitals taken for comparison.

4. That since larger doses of antitoxin have been given the death-rate has been materially reduced, this reduction having occurred in the apparently moribund cases.

5. That no injurious effect has followed the use of the serum.

6. That to arrive at the most satisfactory results in the treatment of diphtheria, antitoxin should be given at the earliest possible moment in the course of the disease.

SUGGESTIONS FOR THE PRACTICAL TREATMENT OF TYPHOID FEVER.

EWART reminds us in *The Lancet* of December 8, 1900, that until the time shall come for the prevention and cure of typhoid fever by germicides the chief objects of our treatment should be: (1) to limit the extension of the ulceration; (2) to treat the ulcers; and (3) to obviate their giving rise to hemorrhage or perforation. Dr. Ewart's remarks are limited to the medical aspects of the treatment.

Stagnation of putrid feces is probably one of the chief dangers. Though it may be to a great extent prevented, it is often overlooked. When stagnant, the more fluid the feces, so much the more likely are they to lead to toxic absorption. Whilst, then, there is an indication for reducing their fluidity, there is undoubtedly advantage in any method which provides for their ready evacuation. The difficulty lies at the seat of ulceration, where the accumulation due to paralysis of the bowel may amount to obstruction. Much of the alarming tympanites of bad cases is probably due to the resulting fermentation in the delayed intestinal contents, and this points to the importance of emptying the cecal pool. On the whole, a lessened fluidity or a moderate solidity of the contents of the lower bowel would seem to be preferable to the opposite extreme, which is a characteristic of the worst forms of typhoid fever. The lesser evil of constipation incidental to an astringent treatment is one easily overcome by daily injections. Due attention to these essential points might perhaps have yielded better results from the various antiseptic remedies which have been tried and subsequently discarded. For the treatment of enteric ulcers, as for that of ulceration in general, an adequate alimentation and local sanitation and antisepsis are the first requisites. If any local effect can be obtained from the internal administration of medicines, some mildly astringent influence is apparently the best, and the same is also indicated as a prophylactic against hemorrhage.

Relative inactivity of the liver is the inevitable consequence of the pyrexia, of the immobility of the patient, and of an exclusively fluid diet. Much of the value of Brand's treatment is, Ewart believes, due to the relief which it affords in that direction. Systematic cool sponging is also efficacious, and it is available in all cases, whilst high temperatures may call for the gentle use to the skin of ice wrapped in flannel. But in his experience the cool bath is rendered unnecessary by the administration of mercury, which excels all medicinal antiseptics in being at the same time a powerful hepatic stimulant, and in providing for the bowel a sufficient supply of its normal antiseptic, the bile. We should not lose sight of the mechanical factors. Our anxiety to avoid peristalsis may have been excessive. Distention of the thinned and ulcerated membrane is the real danger. In view of a possible hemorrhage or perforation moderate contraction of the bowel is the better state and is in itself protective, although active peristalsis is obviously to be avoided. An attempt to carry out some of these principles is contained in the following suggestions, which for the sake of brevity will not include any reference to diet and to nursing, as these matters are now receiving greater attention and are better understood.

The Postural Treatment.— Often in the course of an enteric attack there is obvious fulness and tension and extensive dulness over the right iliac fossa, and a sensation of weight will be conveyed to the hand when placed behind the loin, whilst the left iliac fossa is soft to the touch and resonant. Now it will be found that if the patient be placed for a few minutes on his left side, and once more examined in the supine posture, the conditions are entirely reversed, the right flank being resonant and soft and the left iliac fossa or the descending colon dull and resistant. Repeated observations of this result have for the last three years led Ewart to arrange the bed so as to keep the patient at intervals, or in some cases permanently, in a position of slight inclination toward the left. A partial later decubitus which he has usually found to be sufficient for the purpose may easily be obtained by placing a bolster or a firm pillow under the right side of the mattress so that the body is propped toward the left. A better method, which has the advantage of not disturbing the patient, consists in inclining the bedstead by blocks of suitable height placed under its two right feet, while the patient maintains the dorsal decubitus. Inasmuch as a slight elevation of the foot of the bed is a decided help, a double inclination may be obtained by using

three blocks of uneven heights. The bed in this case looks uncomfortable, but he has not heard of any complaint on the part of the patient. Either of these methods will fulfil an indication of the first importance by emptying the cecal pool, which he regards as an obstruction, and as responsible for fecal stasis higher up and for the toxic typhoid state. When the first method is resorted to there is no object in its being enforced continuously so long as the state of the bowel is carefully watched and the cæcum and lower ileum are kept empty. In anxious cases the other plan is decidedly to be preferred, and should be kept up during the period of danger. The methods in question are, in his experience, free from risk and from appreciable discomfort, and he has not been led to suspect that any undesirable strain is thrown upon the diseased bowel.

The Medicinal Treatment.—The remaining indications have appeared to Ewart to be best carried out by the treatment recommended some years ago by Mr. W. B. Wedgwood, of King's Lynn. Though it will not avail against the fatality of the worst attacks, it has, so far as Dr. Ewart has been able to judge, mitigated the severity of the great majority of cases, and has almost always led to an early amelioration, manifested by the disappearance of sordes, the cleaning of the tongue, the clearing of the complexion, and, above all, the return of the appetite. For an adult twenty minims of the liquor hydrargyri perchloridi and from fifteen to twenty minims of the tinctura ferri perchloridi, with one drachm of syrup of orange or lemon and an ounce of water, are administered every six hours through the attack, and for ten days after defervescence to obviate a relapse. Diarrhea, if present, is quickly stopped, except in the worst cases, and the constipation which often ensues and coincides with an excellent progress is remedied by daily injections of glycerin. The results have been so satisfactory that the administration of alcohol is hardly ever necessary and is carefully avoided, lest it should dull the appetite or burden the liver, but port wine is invariably given during convalescence. In the now considerable series of cases treated in this way salivation has never been observed, and the treatment is always well tolerated provided the dose is administered at an interval from milk meals, even should the milk be peptonized, as is his invariable rule.

To which of the ingredients the greater share of usefulness belongs it would be hard to say. In Ewart's opinion they are both valuable. An astringent effect of the iron upon the entire intestine is rendered probable by its constipating effect upon the lower bowel. We may, therefore, reasonably assume that it acts as a local application to the ulcers, whilst it tends to constrict the bowel and its blood-vessels against the risk of hemorrhage. The many-sided virtues of mercury are probably exerted upon the hepatic, the lymphatic, and the mucous systems, and it is not unwarrantable to suppose that its prolonged administration in frequently repeated doses may be an element in the disinfection of the alimentary canal.

TREATMENT OF PERIPHERAL NEURITIS.

According to an article by BURY, of Manchester, in the *British Medical Journal* of December 8, 1900, the best treatment of that form of peripheral neuritis due to arsenic is as follows:

The first essential in dealing with a case of peripheral neuritis is to find out the cause and remove it, or to stop its action as soon as possible. The cause is nearly always some poison; and if the patient be withdrawn from its influence and placed under favorable conditions, recovery is the rule. In the present epidemic arsenic appears to have been the potent factor, but let it not be supposed that alcohol is entirely innocent. In some quarters there appears to be a tendency to believe that alcohol has been overrated as an etiological agent in the production of peripheral neuritis. On the contrary, all the evidence at present in our possession indicates that it is the common cause of that disease, and, we may add, one of the most powerful influences in other ways which tend to cripple and shorten life. It may be hoped that at least one advantage of the present epidemic will be to direct public attention once more to the enormous quantities of alcoholic beverages which are still consumed in this country.

When we know that patients that visit our hospitals have been in the habit of taking ten, twenty, and even thirty pints of beer a day, and as a result are gradually but surely losing their physical and mental powers, and then reflect on the present arsenical panic, we begin to wonder why there has never been an alcoholic panic. The scare with regard to poisoning by arsenic has been fully justified, but surely consternation on regard-

ing poisoning by alcohol might be looked on as equally natural.

There appears to be a curious difference in the relationships of doctors and patients in respect to alcohol, and to other poisons. If a doctor finds that his patient is taking lead, arsenic, or mercury in poisonous doses, he tells him so, and urges him to discontinue his dangerous practice. But if alcohol in large quantities is being taken, the doctor requires more courage to tackle his patient, for he runs the risk of offending, and possibly losing, his client.

Nevertheless, the gain in self-respect ought to compensate for the temporary loss of a client, for, as Dr. Barlow has well said: "What can be more humiliating to us as medical men than to have repeatedly to attend people who every day are shortening their lives and converting a remediable condition into a hopeless disease, whilst we stand with folded arms, or write prescriptions, and have not the courage to tell them what is right and stick to it?"

Having removed the patient from the influence of the poison, the next thing is to place him under the most favorable conditions for recovery. Now in all except the slightest cases rest in bed is advisable. The patient is thus protected from exposure to cold, the pernicious effects of movement are reduced to a minimum, and local treatment can be carried out more readily and satisfactorily.

In the acute stage the suffering of patients with arsenical neuritis is often extreme; and it is of the utmost importance to relieve this as promptly and effectively as possible. The severest cases require a water-bed; this not only relieves pain better than an ordinary bed, but also gives more support to a weak patient, and thus lessens the danger to life arising from a feeble heart or from paralyzed respiratory muscles.

In feeding the patient or in attending to his evacuations, the nurse should exercise the greatest care and gentleness, so that all unnecessary movements on the part of the patient may be avoided. On no account must she attempt to massage the limbs.

As regards drugs, in the earliest stages of neuritis, salicylate of sodium and potassium iodide, either alone or in combination, appear to be of service. Neuralgic pains may be relieved by the administration of antipyrin, phenacetine, or exalgin; but when suffering is very great the hypodermic of morphine is necessary. Let it be particularly noted that in the acute stage strychnine must not be given.

But of far greater importance than drugs is the regular and careful administration of nourishment, in the forms of boiled milk, beef tea, beef extracts, soups, and broths. Benger's food or peptonized gruel may be required, and when vomiting is a prominent symptom nutrient enemas should be administered.

Complete rest in bed in a well ventilated room, careful feeding, and exposure to sunlight are the essential points in the treatment of the early stages of multiple neuritis.

When the acute symptoms have subsided, but not before, recourse may be had to massage, electricity, and tonic treatment. In the acute stage massage would be unendurable, and certainly very hurtful; but its application must not be delayed too long. It may be employed as soon as extreme pain and tenderness have disappeared. At first massage should be employed in the gentlest manner and only for short periods of time; but as soon as the patient stands it well, it ought to be regularly and vigorously applied. The patient should also be encouraged to make voluntary movement against resistance; and other modes of Swedish exercises can be employed with advantage. Incoordination of movement is best treated by Fraenkel's method, the essential feature of which is to submit those muscles which manifest the incoordination to a series of graduated and systematic exercises.

By these means the nutrition and strength of the muscles and the coordinating power are improved, while any tendency to contracture is overcome. Moreover, the patient's capacity for assimilation of food is thus steadily increased.

The restoration of the degenerated nerves and muscles may also be aided by the daily application of electricity. The constant current is the most useful in stimulating the nutrition of the affected muscles. Large electrodes are desirable, in order that as much muscular tissue as possible may be reached by the current. As soon as the muscles respond to a weak faradic current, this form of electricity may also be employed with advantage. A daily warm bath, followed by vigorous friction to the skin, is of value, whilst tonics and cod-liver oil often prove of great service. Arsenic has been recommended in the treatment of multiple neuritis, but of course it must not be given in the cases under consideration. Of all

drugs that may be regarded as tending to the restitution of the paralyzed parts, strychnine is unquestionably the most valuable, and it is better to administer it hypodermically than by the mouth. It is advisable to begin with a small dose, say one-fiftieth of a grain, and then gradually increase the quantity.

TREATMENT OF SKIN CANCERS WITHOUT OPERATION.

STELWAGON (*Journal of the American Medical Association*) notes that it has been clearly shown by microscopical investigations that the outlying pathological epithelial cells may often be found considerably beyond the apparent border of the disease, and are, therefore, often missed by the surgeon's knife. In the caustic method such cells are usually destroyed or weakened by the products of cauterization or by the marked inflammatory action resulting, and a reappearance of the growth is thereby rendered less probable. Further, if the parasitic view of the cause of these growths be accepted, it can be readily understood why the caustics usually employed may have a very positive influence on the parasitic agent. Moreover, the resulting inflammatory action on the surrounding tissues and the ensuing suppuration have an influence antagonistic to outlying morbific cells.

Another important consideration which is often overlooked in the management of these cases is that the secret of the successful and permanent removal of an epithelioma is to get the case in its earliest stage, before there has been chance for an invasion into the surrounding tissue. It is often just at such times that these patients first apply for advice, but the suggestion of the knife, or even of the curette, is followed in many instances by a postponement of treatment, and in consequence a greater growth of the lesion and less probability finally of permanent removal. A cauterization at this time, against which there is rarely opposition, would result in permanent cure.

Irrespective, however, of the natural objections of many of these patients to operative measures, Dr. Stelwagon believes that the caustic method properly followed out lessens the chances of recurrence. There is no damage done with caustics if they are judiciously and boldly used; it is the temporizing treatment with mild caustics or the hesitating treatment with active caustics which may often do harm. The mild caustics, in fact, of which silver nitrate is an exponent, should have no place in the treatment of these growths.

There are many caustics which have a very positive action, but the writer speaks only of those which have been most useful in his hands, and with which he has treated successfully many cases of skin cancer of the superficial type. These are four in number—arsenious acid, caustic potash, zinc chloride, and pyrogallol. The first three are those which are most commonly employed by those who have had the largest experience in treating cutaneous epitheliomata by the caustic method.

As an adjuvant of no mean value to these several caustics—with the exception of the caustic potash—Stelwagon has been in the habit of employing salicylic acid, in the proportion of five to ten per cent. This addition, as a rule, does away with the necessity of any preliminary preparation of the surface in those cases in which the skin is as yet but slightly broken or ulcerated. As a rule, however, in all those cases of epitheliomata over which the epiderm is, in places at least, still comparatively intact, and in which arsenious acid, zinc chloride, or pyrogallol is to be used, it is best to apply momentarily a weak solution of caustic potash of about five- to ten-per-cent strength; this removes the outer epidermic surface and makes the action of the applied caustic much more rapid and thorough. This potash solution should not be allowed to have a caustic action, but merely a superficial effect, and then washed off. In those cases in which the central part is ulcerated, but the outlying portions still covered with skin, this application should only be made to the latter.

In the selection of one of the four caustics named, one fact is to be remembered, and that is that pyrogallol and arsenious acid have practically an elective action, destroying the pathologic tissues, and having, when properly employed and not too long applied, but little influence on healthy structures. This so-called elective action is doubtless due, in part at least, to the feebler resisting power of morbid tissue. Moreover, pyrogallol is, as a rule, a painless caustic.

In small lesions it is a matter of indifference whether either arsenious acid, zinc chloride, or caustic potash be used. In large-sized lesions, if the epitheliomatous area is curetted first, a measure to which some have recourse, then the pyrogallol ointment is best for destroying what pathologic tissue and

cells may have been left after the curetting. A momentary application of a fifty-per-cent or stronger caustic potash solution may also be used for this purpose. It is in very superficial types, in which the tendency is to run along the surface rather than deeply, that pyrogallol ointment may be employed to advantage. It has its special field, however, in cases similar to the last named, when the patient is advanced in years, or in a depressed condition of health. Its painlessness, or comparative painlessness, especially commends it for such cases, in which stronger caustics or operative measures could not well be employed. In extremely sensitive women this remedy can also be used.

Pyrogallol is, however, it should be stated, the weakest and probably the least certain of the several named. It is also slow in its action. It requires from ten days to three weeks for satisfactory results, and may later need a repetition for a shorter period. The formula employed should be one of 25- to 33⅓-per-cent strength, made up with three parts vaselin to one part simple cerate; or with three parts resin cerate to one part resin plaster. The proportion of the simple cerate or the resin plaster is to be varied according to the season, whether warm or cold. The ointment may be made more effective by the addition of ten per cent of salicylic acid; if this should give rise to pain, a small quantity of cocaine, five to ten grains to the ounce, can be added. The method of applying it is as follows: It is spread thickly on the woven side of patent lint or on a piece of kid, to the thickness of one-eighth to one-fourth inch. Depending on the region involved, it may be advisable to bandage it on or to fasten with adhesive strips; as a rule this is only necessary during the night. The dressing is renewed every twenty-four hours, the surface being gently wiped off at each renewal. At the end of three or four days a certain amount of slough is produced; this is, so far as possible, gently rubbed or picked off, or the part may be poulticed for several hours to a day. The ointment is immediately reapplied as before for three or four days more, and in this manner it must be continued for ten days to three weeks, according to circumstances; finally, after removing the slough, a mild indifferent ointment may be used, and healing permitted to take place. For this purpose an ointment of resin cerate, or zinc oxide, with a few grains of carbolic acid to the ounce, will answer well; it is changed two or three times daily, according to the amount of discharge, and the parts washed at least once daily. If complete healing should not ensue, or should a recurrence subsequently show itself, the same plan is to be repeated.

Zinc chloride has been employed for the removal of morbid growths for some years, and had in former days, probably, a greater number of advocates than at present. It destroys healthy and morbid tissue alike, the former possibly somewhat less rapidly than the latter. Its action is a peculiar one, in that it seems to mummify the tissue. The same preliminary preparation should be made for its use as with the application of pyrogallol; the overlying skin, if intact, being softened with the potash solution. While this is not so necessary with the caustic, it hastens its destructive action. It is rarely used pure, but is most commonly employed as a paste with flour. It is a painful caustic, and as its painfulness is evidently lessened by the addition of cocaine, this may be incorporated to the extent of five to twenty per cent. Probably the best paste is that known as Bougard's, the composition of which, as usually given, is as follows: Wheat flour and starch powder, each 4 drachms; arsenious acid, 4 grains; cinnabar and ammonium muriate, each 20 grains; corrosive sublimate, 2 grains; zinc chloride crystals, 4 drachms; boiling water, 6 drachms. The first six ingredients are thoroughly mixed and the zinc chloride dissolved in the water, and then the two mixtures rubbed together *secundem artem*. It is difficult to have this paste made with the amount of water as given. It is advisable, however, to use as little water as possible, so that the paste may be of stiff-dough consistency, and then to add at the time of application a sufficient quantity of a saturated solution of cocaine hydrochlorate to bring it to working consistency. The paste is spread on any suitable material and applied to the growth, extending slightly beyond the border. The depth destroyed is usually equal to two or three times the thickness of the layer of paste. There is a variable amount of inflammatory swelling in the course of twenty-four hours, but this is rarely so marked as from the arsenical application to be spoken of later. At the end of twenty four hours, according to the intensity of the inflammation, the plaster is removed. If the destruction is deemed insufficient, the mummified tissue is to be gently pared away, which can

be done without pain, and a fresh application made. In lesions of superficial character rarely more than one application is necessary. The dead tissue is removed by paring it away and by poulticing; an ointment may be kept constantly applied and the slough permitted to come away gradually. The separation of the slough requires usually from five to twenty days. The subsequent treatment is the same as with the use of the other caustics.

A paste made extemporaneously, consisting of one part zinc chloride and three parts flour, using the saturated solution of cocaine hydrochlorate to make it up into a paste, will also act satisfactorily. Zinc chloride is of special service when the growth is seated over a vessel, as, for instance, over the temporal artery, as its mummifying action prevents any hemorrhage from destructive action.

Arsenic is undoubtedly the best caustic to employ in many of these cases. Marsden, who was the first to emphasize the value of this caustic in these cases, advised a paste made of two parts of the arsenious acid and one of mucilage acacia. Robinson recommends two strengths, one of equal parts of arsenious acid and powdered acacia, and one of two parts of the arsenic and one of the acacia, using sufficient water at the time of application to make into a paste of the consistency of stiff butter. Marsden advised against applying the remedy to a larger surface than one square inch at one time. If the area is somewhat larger than this, and it is desired to treat it all at one time, satisfactory results can be obtained by using zinc chloride paste centrally and the arsenical paste peripherally.

The paste is spread over the diseased area, well overlapping the edges, spreading to about the thickness of one-fourth inch; over this is placed a piece of patent lint; in five to ten minutes the paste has hardened somewhat, and the edges of the lint, if necessary, may be trimmed. This may usually be left on for twenty-four to forty-eight hours; poultices are then to be applied and the slough is gradually removed. If for any reason poultices cannot be continuously applied, they may be employed during the daytime and a simple ointment dressing at night. In some instances, in which the constant application of poultices is not feasible, an ointment dressing is applied until the slough comes away, and in fact until complete healing takes place. The slough clings for some time; with poultices it usually comes away in five to ten days; with ointment it takes considerably longer. Robinson advises that the application be left on not longer than twenty-four hours, there being a possibility that too much action will have taken place if kept on longer, and that dangerous absorption might ensue. The effect of the application is that in ten to twelve hours a good deal of inflammatory swelling and edema have taken place; if at the end of twenty-four hours there is no evidence of such action, the plaster should be removed and a fresh one applied. Ordinarily one to two days' application will suffice to show sufficient destruction and inflammatory action.

In weaker proportions, arsenious acid may be used with great advantage in the superficial spreading epitheliomata, such as mentioned when speaking of the use of pyrogallol. For this use the application much employed by the late Professor Hebra in the treatment of lupus vulgaris can be used. It consists of arsenious acid, one part; artificial cinnabar, three parts; rose-water ointment, twenty-four parts. This may be used over palm-sized areas and without risk of bad results from absorption. It is spread on patent lint, to the thickness of one eighth inch or more, and applied to the whole diseased patch; this is covered with some impermeable material and fastened on with adhesive strips or with a bandage. It is changed every twenty-four hours. At the end of the first day slight swelling and some pain are noticed, which increase during the next twenty-four hours. This application is to be continued for three days, sometimes four; at the end of this time, if the action is insufficient, a further application is to be made. The subsequent treatment is the same as with other plans. If there are still evidences of disease after the slough comes away, the treatment can again be repeated. The incorporation of cocaine in this ointment will render its action less painful.

Caustic potash is a powerful caustic, and must always be used with care. It is rapid in its action, one thorough application usually sufficing to destroy the entire growth. It has its special field in small and beginning cutaneous skin cancers, and in those in which time is important and in which the patient can only remain under observation a short period. The stick should be employed, or the strongest possible solution. The former is preferable. If the surface of the growth is crusted this should be removed, and the parts

outside the diseased area protected with a layer of vaselin, after which the caustic is applied. If the lesion is small and superficial, the desired effect is usually sufficiently attained in a minute or two, and then further action is to be prevented by the application of dilute acetic acid or vinegar. The free use of caustic potash without restraint with this acid application means unnecessary pain and often unnecessary destruction and disfigurement. This caustic is painful, but only at the time of application. If the growth is somewhat large, injections of a weak solution of cocaine may be made at first, or moderate obtunding may be secured by the cataphoretic introduction of cocaine. Subsequently the parts may be poulticed until the slough comes away, which may require several days; or when this cannot be followed out, an ointment similar to that prescribed after the use of the pyrogallol ointment may be continuously employed. In the latter event the slough is slow in coming away.

The proper use of this caustic constitutes an extremely valuable method of treating these growths, and has, as already remarked, the great advantage of rapidity. It might even be satisfactorily used in larger epitheliomata, if applied under anesthesia. The reactive inflammation which always follows the application of this caustic is in itself an element of some value.

THE TREATMENT OF GONORRHEA IN WOMEN.

GIBSON (*Edinburgh Medical Journal*, vol. iii, No. 6) quotes a communication made by Janet to the International Congress in Paris. A recent gonorrhea in the female may affect the urethra, the glands of Skene and Bartholin, the vagina, and the cervix uteri. At each examination one should discover which of them is affected, and apply the treatment accordingly. The urethra is irrigated with a cannula so constructed as to furnish a recurrent stream, with permanganate solution of the strength of one-half to one per cent. A short catheter may also be used to wash out and fill the bladder; the patient then passes the solution, and irrigates the urethra in so doing. When Skene's glands open outside the urethra, they are emptied by pressure and washed out with permanganate solution (1 to 300) by means of a syringe provided with a fine soft cannula; when they open into the urethra, the lips of the meatus are separated by a bivalve speculum, the openings of the ducts are searched for, and the glands washed out in the same way. Bartholin's glands are also emptied by pressure, and are washed out with the same solution. The vagina is irrigated with permanganate solution (1-to-2000), and the cervix is swabbed out with cotton-wool soaked with the permanganate solution (one-per-cent). The permanganate may be replaced by protargol, in the strength of two per cent for the cervix, one per cent for the glands, and one-half per cent for the urethra.

CANCER OF THE RECTUM AND ANUS.

SCHNEIDER (*Annals of Surgery*, vol. xxxii, No. 6) reviews 115 cases treated at Rostock during the period of 1883–1899 with the main purpose of showing the gain secured by the sacral methods introduced by Kraske in 1887, and thus offsetting the adverse contention of English and French surgeons. Sixty-six males and forty-nine females made up the list of the afflicted, the average age being fifty-nine for the former, and fifty-five for the latter. Four cases are reported during the juvenile period, the youngest fourteen years old, and all were examples of cylindrical carcinomata, and their fate that of adults with like carcinoma.

Etiologically, hemorrhage and prolapse were found responsible factors in the greater number of instances. There were no distinctive rectal signs peculiar to carcinomata, as in most cases digital examination alone cleared up the situation.

Whereas Kraske's operation has enlarged the field and scope of operative interference, it has in no measure replaced the older procedures, which are applicable to less extensive carcinomata, and are therefore not competitors with Kraske's method. Concurrent with the latter are Kocher's and Schlange's osteoplastic methods. Against the latter it is held that it offers too small a space and leaves too many pockets, which favor wound infection. Other procedures, like Rehn's vaginal route or the abdominoperineal route of Quenu and Hartmann, were not practiced.

The indications set down for Kocher's method is a growth beginning just above the anus, and whose upper limit can still be palpated, no adherence to the sacrum, and a tumor that can be drawn down. Kraske's procedure was reserved for growths so extensive as not to permit of the introduction of the finger into the lumen of the bowel in

order to palpate the upper limit of the tumor, and where extensive adhesions existed with the sacrum. The performance of methods without bone resection is limited to growths situated no higher than eight to ten centimeters, which must not be circular or adherent, nor must there be any metastases in the sacral glands.

As inoperable are to be regarded cases where the bladder or uterus is invaded, or where infiltrations are extensive or flat, and where there are metastases of the internal organs. Between these two latter extremes lies the medium for bone resection methods, which embrace by far the majority of operations. The restoration of the rectal canal was favored by end-to-end suture of the segments, provided the proximal stump was freely movable, and enough of the anal stump was preserved; and be it here stated, that only in exceptional instances could the peritoneal reflection be spared. To insure accurate adaptation, supplementary sutures were passed through perirectal tissues. This method was practiced in seven out of seventeen cases with success. Where the distal segment was small and the proximal freely movable, invagination of the latter two into the former was done; this was executed thirty-one times successfully. An artificial sacral anus was made seven times, and three times according to the torsion method of Gersuny, and only in one instance, according to the latter method, was continence obtained.

A summary of the results is as follows: Cases operated without bone resection, twenty. Of these, thirteen died after one year and ten months; two died as a direct result of the operation; three times was continence obtained. Seven survived three years, and of these two even lived beyond nine years.

With bone resection according to Kocher's method, twelve cases were subject to operation; four died from complications associated with the operation; of the surviving eight only one lived three and another six years. In no instance was continence obtained.

Operated on by Kraske's method there are seventeen cases; thirteen survived the operation; four died from complications intimately dependent upon the operation; seven died after one year; five are living after one year. Kraske's personal experience in the first ten cases offered a mortality of forty per cent; later on, with extensive experience, in fifty-one cases this mortality was reduced to 9.8 per cent.

By Schlange's temporary bone resection four cases were operated on, with no deaths from the operation; only one patient lived three years thereafter. The thirty-two cases of colostomy had an average life of eight months. Twenty-eight cases treated palliatively lived thirteen months.

In conclusion, it is stated that of the thirty-one cases treated with bone resection methods forty-five per cent died in one year, fifty-eight per cent in two years, and the operation mortality was twenty-three per cent. Notwithstanding this high death-rate, the author expresses his belief that with the dexterity pursuant to a larger experience these figures can be reduced, as Kraske himself has shown, so that the field for the only operative procedure which accomplishes a radical extirpation of the neoplasm can be greatly extended. — *Beiträge zur Klinische Chirurgie*, Bd. xxvi, Heft 2.

USEFUL HEARING OBTAINED IN A DEAF-MUTE AGED NINETEEN YEARS.

GIBSON (*Australasian Medical Gazette*, vol. xix, No. 10) reports the case of a girl nineteen years old, who as a baby could hear and had begun to talk a little, but contracted measles at the age of eighteen months. She had not talked since until taught lip-reading. For all practical purposes she was deaf and dumb. The tympanic membranes were opaque and indrawn. A tuning-fork, if vibrating strongly, could be heard in each ear by air conduction. On examining the nasopharynx a dense band of hypertrophy in each Rosenmüller fossa was found. The hypertrophied tissue was removed, and her ears were regularly Politzerized. This was followed by a very great improvement in hearing, so that words distinctly spoken at the distance of a few feet in the ordinary voice could be understood.

FRACTURE OF THE SPINE.

LATHROP (*Annals of Surgery*, vol. xxxii, No. 6) thus summarizes his paper on this subject:

1. In partial lesions we should operate.

2. Where the lumbar region is involved, with lesions of the cauda equina, operation offers the best chance of recovery.

3. In fracture of the spinous process, lamina, or entire neural arch, operation is demanded.

4. Should immediate operation not be done, and we wait six to eight weeks, with the result that paralysis of the bladder and bowel continues, with cystitis and severe bed-sores present, we may be sure that nature cannot relieve the case, and an operation is not only indicated, but demanded.

THE RADICAL CURE OF INGUINAL HERNIA IN THE FEMALE.

The method that Dr. COLEY (*Annals of Surgery*, vol. xxxii, No. 6) has employed in 123 cases is practically Bassini's method as performed in the male, the single step of transplanting the cord being omitted. The incision is made one-half to three-quarters of an inch above and parallel to Poupart's ligament, and should extend nearly to the level of the anterior superior spine. The aponeurosis of the external oblique is slit up well over the internal ring and dissected back to the edge of the rectus on the inner side, and on the outer sufficiently far to expose the thick fold of Poupart's ligament. If the sac is sought for high up, just below the edge of the internal oblique muscle, there will be no difficulty in finding it. After the sac has been dissected from the round ligament and thoroughly freed well within the external ring, it is transfixed and tied off with catgut. The wound is then closed in three layers as in Bassini's method, a medium-sized kangaroo tendon being used for all buried sutures, and catgut for the skin; in the deep layer, interrupted from above downward, bringing the internal oblique and transversalis muscle over to Poupart's ligament. The round ligament is allowed to drop back into the lower angle of the wound, and as it approaches the pubic bone it is so small that it requires much less space than the cord in the male. The aponeurosis is now sutured with a continuous suture of kangaroo tendon, about the size of a No. 1 catgut. The skin is closed without drainage, and the wound dressed according to the practice that he has used in all hernia cases the past ten years, viz., with iodoform gauze and moist bichloride gauze 1:5000.

This method of operation and dressing has given such admirable results as regards primary union that Coley has been loath to change. Prior to December, 1898, when he began to use rubber gloves for assistants and cots or gloves for himself, he had ninety-six per cent of primary wound healing; and since this date he has had 150 cases of hernia, with but one suppuration, which was proved bacteriologically to have been due to imperfect sterilization of the skin of the operative field rather than to defective technique.

As bearing on the necessity of wearing rubber gloves during operation, he cites the bacteriological findings in thirty-five examinations. In the scrapings beneath the nails of the surgeons no growths were found in eighteen cases; in seventeen various forms of bacteria were present; in seven cases diplococci; in two cases streptococci. In the majority of instances the chloride of lime method was used for the sterilization of the hands.

Sterilizations of the skin of the field of operation were successful in the large majority of cases.

Of sixty-eight cases in which portions of the skin were removed from the field of operation just before the primary incision was made, fifty-three were found to be sterile, while in fifteen only were there bacterial growths. Of these streptococci were found once; diplococci, five times. The presence of these organisms had little, if any, influence upon the wound healing, with the exception of one case in which streptococci were found. In this case, although gloves were worn by the surgeon and the assistants, the operation was perfectly simple and rapidly performed. A sudden rise of temperature occurred twenty-four hours after the operation, and continued high until the dressing was removed. At the end of forty-eight hours extensive suppuration was found, extending down to the deep fascia, and a culture made from the base showed a pure culture of streptococcus, proving that in this instance infection was due to the imperfect sterilization of the skin.

In regard to results of operation in inguinal hernia in the female, few statistics are available. Bloodgood's report (*loc. cit.*) of operations on 459 cases of hernia at the Johns Hopkins Hospital contains a list of thirty-nine cases, with detailed results. The round ligament was excised in twenty cases, and the internal oblique muscle divided and transplanted (drawn down to the line of the wound). In six cases the ligament was excised, but the muscle not divided. In three cases the round ligament was not disturbed, but the internal oblique muscle was divided and transplanted. In five cases the round ligament was left undisturbed, and there was no division of the internal oblique muscle. In two cases the round ligament was trans-

planted at the upper angle of the divided internal oblique muscle in the same manner as the cord is transplanted in the male (Halstead's operation).

In regard to results, death occurred in one case, recurrence in one case. Perfect results were noted in twenty-one cases. Six cases have remained well for three to eight years, three cases two years, and nine cases one year.

Dr. Coley's personal results are as follows:

From 1892 to the present date he has operated upon 123 cases of inguinal hernia in the female without mortality.

The ages of the patients have ranged between four and seventy years. Seventy-three patients were under fourteen years of age, and fifty cases between fourteen and seventy years. In eight cases, or 6.5 per cent, suppuration occurred; though in every case it was slight and limited to stitch-hole infection, not prolonging the stay in the hospital.

The average time he has kept patients in bed has been ten days, and they have been allowed to go home at the end of two weeks. A spica bandage is kept on for two weeks longer, at the end of which time support of any kind is discontinued.

He has been able to trace all but thirteen patients.

One was well seven years after operation; two were well five to six years after operation; five were well four to five years after operation; fourteen were well three to four years after operation; twenty-six were well two to three years after operation; twenty-seven were well one to two years after operation; sixteen were well six months to one year after operation.

THE SURGICAL TREATMENT OF PULMONARY CAVITIES.

SARFERT (*La Semaine Médicale*, No. 50, 1900) having had occasion to treat a man suffering from a tuberculous cavity of the lung with a persistent fever and other symptoms of active septic absorption, made an incision above the second rib from a little to the outer side of the sternum to the axilla, dividing the muscles, and exposing the rib, which was then resected, after which the cavity was opened by the thermocautery. The fever ceased at once, and the cavity rapidly contracted, but unfortunately the patient died in two months from tuberculous involvement elsewhere.

TREATMENT OF PROSTATIC HYPERTROPHY.

GUITERAS (*New York Medical Journal*, vol. lxxii, No. 23) is in the habit of performing prostatectomy by what he calls the recto-vesical method, although no part of the operation proper is performed through the rectum, the fingers simply being inserted to exert direct counter-pressure and guide the operating finger, which is working through the bladder. The steps of the operation are, briefly, as follows: Suprapubic cystotomy is performed, after which retention sutures are passed through the bladder wall on each side of the incision. Careful rectovesical palpation is then made, two fingers of the left hand being in the rectum, while the right forefinger is in the bladder, and a visual examination is made by means of an electric light inserted into the bladder. A pair of scissors is inserted into the bladder, the closed blades being pressed against its floor in the region of the neck in the median line, until the blades are felt depressing the prostate against the two fingers of the left hand in the rectum, which are in turn pressing upon the gland in the median line from below, showing exactly whether they are in the right position or not. The blades of the scissors are opened, and a cut is made through the bladder tissue covering the gland in a line corresponding to the space between the fingers and the rectum. The forefinger of the right hand is then inserted into this cut through the bladder, and gradually works its way between the capsule and the gland. The two fingers in the rectum feel the one in the bladder working its way between the capsule and the gland, and they start counter-pressure while the enucleation is being performed. The finger-tip under the capsule first sweeps to one side, and pulls out one lateral lobe, then to the other side, and enucleates the other, and finally removes the middle lobe; or it first works its way backward under the base of the middle lobe, which is enucleated with a dissecting rotary movement, and then proceeds to enucleate the two lateral lobes. The gland having been removed, there is always free hemorrhage, and very hot water should be injected for two or three minutes into the bladder suprapubically, during which time the surgeon again washes his hands. He then passes a grooved sound, preferably a lithotomy guide, through the urethra into the bladder, and having brought the patient into the lithotomy posture, he rapidly cuts through the mem-

branous urethra, and pushes a large peritoneal drainage-tube into the bladder, which he fastens to one side of the perineal incision. The finishing steps of the operation are to put two catheters into the bladder suprapubically, with a gauze drain packed down beside them into the cavity made by the removal of the prostate, fasten them into the skin of the bladder wall, and then sew the bladder wall up to the drain. The surgeon then closes the abdominal wall, including fascia, muscle, and skin, as far as the drain. The floor of the prostatic urethra should be cut through from above downward before the perineal tube is left permanently in place, to prevent the formation of a pocket, which would retard the cure.

The After-treatment.—An enema of a pint of hot saline solution at a temperature of 120° F., to be retained, should then be given to the patient, together with one-thirtieth of a grain of strychnine, and he should be put to bed with hot bottles at his feet. The shock in these cases is often great, and should be guarded against as much as possible. As soon as he comes out of the effects of the ether, a little hot water or bouillon should be given, and from this time on the hot water should be pushed *ad libitum*. If the patient vomits the water, give more in a few minutes, and continue to force it. It is wonderful how much water can be given in these cases, some patients taking between one and two gallons in the first twelve hours. This has the effect of flushing the kidneys and producing free diuresis. Any water is good for the purpose, although Dr. Guiteras is in the habit of prescribing some mild diuretic spring water.

The strychnine in one-thirtieth-grain doses should be given every four hours hypodermically, and it is well to repeat the hot saline enema every four hours. In this way something can be done for the patient every hour if they are alternated, either strychnine, hot rectals, bouillon, or water, remembering that the water should be pushed to its maximum tolerance.

It is well, both before and after operation, to give a urinary antiseptic, preferably urotropin, in ten-grain doses, three times a day. A diet of milk, from two to three quarts a day, is advisable. The bowels should be moved with some saline water, Apenta or Hunyadi, on the second day.

The suprapubic tubes can be removed at the end of a week, and the perineal one at the end of two or three weeks. The drainage in these cases is by the siphon method, into bottles hanging from the side of the bed, two pieces of tubing going from the suprapubic opening, and one from the perineal.

In closing his remarks, Dr. Guiteras states that he considers the operation of prostatectomy as still in its infancy, in the same position as hysterectomy was some years ago, but he has no doubt that it will some day be simplified, and it behooves all surgeons interested in this line of work to try to improve the methods and technique of the procedure.

TREATMENT OF PLACENTA PREVIA BY A CÆSARIAN SECTION.

DONOGHUE (*Boston Medical and Surgical Journal*, vol. cxliii, No. 23) urges that the treatment of placenta previa in the past has not taken sufficiently into consideration the fact that two lives are involved, and while craniotomy has become a thing of the past, and its performance on a living child, by many men, not justified to-day, there is not the same feeling about the induction of labor, or the resort to severe operative delivery, which no less surely than craniotomy takes away the chance of life from the child. Luk, in 1887, speaking of craniotomy, said: "If it were proposed to a physician to beat out the brains of a new-born child with a view to diminish the perils of the puerperal period, the proposition would certainly be rejected as too horrible for consideration, even though the physician was convinced that the theoretical ground for the recommendation was correct. Yet there seems to be a prevailing disposition to treat any hesitancy to destroy the unborn child, in the interests of the mother, as pure sentimentality."

For the purposes of this paper a consideration of the following will be sufficient: (1) Induction of premature labor; (2) rupture of membranes followed by natural delivery or delivery by forceps; (3) manual dilatation of os with delivery by version; (4) Cæsarian section.

Induction of premature labor is advised as soon as diagnosis is made. This treatment is based solely on the desire for the safety of the mother without regard to the child's life. After the seventh month it might be logical treatment if no better offered, but before the seventh month it should not be justified. In the early days of pregnancy the classical treatment for threatened abortion should be given,

namely, rest in bed, patient not being allowed to rise for any purpose during continuance of symptoms; all mechanical irritation of cervix should be avoided and the bowels kept open. In cases of contracted pelvis, maternal mortality of section at term is no higher than after induced labor, while the fetal mortality is practically nothing. On the other hand, the cases of induced labor show an immediate fetal mortality of 33⅓ per cent, with an ultimate mortality of from 50 to 75 per cent. This fetal mortality can never be much diminished, for it depends upon conditions over which we have no control, namely, the delicacy of the premature infant and its consequent liability to suffer from the effects of labor; the frequent necessity for interference, due to malpositions and deficient uterine action; the liability of the child to perish from malnutrition within the first weeks of extra-uterine life; and the impossibility of knowing that we are dealing with a viable child.

The second method is useful in cases of lateral or marginal placenta, where good pains are present and os dilated or dilating. Under favorable conditions this treatment shows extremely low mortality, but it is useful only in cases of complete previa.

The third method, the treatment of placenta previa by manual dilatation followed by version, is almost universally used to day by English and American obstetricians, and has shown in the hands of experts a steadily decreasing maternal mortality; but it can hardly be called an ideal treatment, since while it has reduced the maternal mortality to probably the lowest point obtainable (about twelve per cent), it has done so at the expense of the fetus.

Blackmer, whose results with version show the lowest mortality of reported cases, says: "The safety of the mother is, of course, of paramount importance, but a mode of treatment which does not in any way tend to lessen the already numerous dangers to the child's life cannot be called an ideal one. We are justified, then," he continues, "in considering any method which may diminish the risk to the child while at the same time it does not increase the risk to the mother."

It would seem that section, in preference to other operative interference, is indicated in: (1) Cases of complete previa; (2) cases of previa in primiparæ when signs of fetal or maternal exhaustion are evident; (3) when the condition of rigid os is present; (4) where there is a history of previous operative delivery; (5) in transverse positions, and in cases of prolapsed cord, if the cord is not easily returnable.

That Cæsarian section is the easiest of celiotomies all who have performed it admit, and in nearly every large community it is possible to obtain an operator capable of performing it under strict aseptic and antiseptic precautions. It is also an extremely safe operation, not only for the mother but for the child, and this latter fact leads Dr. Reynolds to say in the paper already quoted: "Is not the life of the child as good a reason for the performance of a simple abdominal operation as the chronic backache for which such operations are done daily?"

THE TREATMENT OF FISSURE OF THE ANUS.

ROSENBACH (*Berliner Klinische Wochenschrift*, No. 10, 1900) advises against surgical measures in the treatment of fissure *in ano*. He cautions the patients to avoid the habit of constipation incident to the pain that is experienced when the bowels are moved, and advises them to palpate and massage the spasmodically contracting sphincter by means of the finger introduced into the anal aperture. He advises a conical rectal dilator which is used regularly after the bowels have been opened. Under this treatment the patients recover.

POST-MATRIMONIAL GENITAL INFECTIONS.

Under a somewhat different title BOISSARD (*Journal de Médecine de Paris*, No. 49, 1900) discusses the prevention of post-matrimonial inflammatory lesions of the genitalia. He believes that these diseases and their sequelæ may be almost absolutely guarded against by the regular use of a corrosive chloride douche. He advises the ordinary fountain syringe, provided with a glass nozzle which is kept in a strong solution of bichloride. The fountain syringe holds two quarts and is provided with a tube five feet in length.

The strength of the solution employed varies from 1 to 20,000 to 1 to 4000, according to the tolerance exhibited by the mucous membrane. The nozzle is introduced into the vagina and the vulva is pressed about it so that the whole vagina is distended; the antiseptic fluid thus reaches all its recesses. On relaxing the compres-

sion, the retained fluid gushes out. This procedure is repeated many times, and two quarts of the solution is used. After having completed the irrigation, the exterior genitalia are very carefully washed in a solution of the same strength.

These irrigations should be repeated daily, and will, according to the author, prevent nearly all the non-specific and specific infections to which women are subject.

THE TREATMENT OF NEURALGIA BY ACUPUNCTURE.

SUTHERLAND (*La Semaine Médicale*, No. 50, 1900) reports the immediate relief of severe neuralgic pains, and particularly that type of pain called lumbago, by a simple and almost painless procedure. He pinches up a fold of the skin directly overlying the point of suffering, and pierces it through and through with a needle, which is allowed to remain in place for from three to twenty minutes. The relief experienced, due no doubt to an irritation of the nervous terminals and a modification of the circulation, lasts for about ten hours.

KIDNEY SUCCESSFULLY REMOVED FOR COMPLETE TRANSVERSE RUPTURE.

RUTHERFORD (*Glasgow Medical Journal*, vol. liv, No. 6, 1900) reports the following case:

James K., aged sixteen, while riding a bicycle was thrown from it, receiving such a bruise on the right side that he had to be taken home in a cab. From the time he got home till seven o'clock the next morning the urine passed contained more or less blood. No blood was seen in the urine after his admission to hospital. Pain was complained of all over the abdomen, with boarding of the muscles and general tenderness, though it is noted that the pain in the abdomen was not localized. Patient lay on his back with his legs drawn up, and his trunk bent over to the right side, as if to relax tension on the right lumbar region. Dulness to superficial percussion extended forward nearly to the anterior axillary line, interfering with the region of the colon. There was no bulging in the loin.

The pain was more or less constant, and so severe that the patient cried from time to time during the day of admission, and had one-eighth grain of morphine in the afternoon. Fomentations had been used at home, and were continued after admission, and seemed to give some relief when they were freely applied.

There was no appearance of shock. The pulse, on admission, was about 108, respirations 40, and temperature that afternoon 101.2°.

From early morning till 8 P.M. he had only passed seven ounces of urine, and this was quite free of blood.

Two days later it was noted that the condition was much as before, except that while the pain was less severe and the tenderness more localized to the right side of the abdomen, it was possible to feel a more definite resistance in that region.

An incision was made parallel to the last rib and about a fingerbreadth below it. On dividing the lumbar aponeurosis, black blood in more or less clotted condition escaped, and was removed with fingers and swabs to the amount of what seemed a pint. The kidney itself was found torn, or fractured across, and separated from the ureter and blood-vessels. On removal of the two portions, the fractured surfaces were covered with a layer of firm clot. The surface of the kidney showed patches such as are usually associated with embolism, alternating with areas darkened by extravasated blood. Only one vessel was tied, a vein connected with the upper fragment. Little or no arterial bleeding was seen.

The wound was stitched in part, and packed with iodoform gauze, and gave no further trouble till a month later (October 20), when on taking off the dressings Dr. Rutherford was surprised to find some pouting granulations in the middle of the scar, and on exploring the sinus found a piece of gauze packing which had become buried. Its withdrawal was followed by suppuration, which necessitated the use of a drainage-tube for a few days.

On the day of admission the patient passed seven ounces of urine in the first twelve hours; during the next day, twenty-nine ounces; on the day of operation, seven ounces; on the next day, twenty-one ounces; on the day following twenty ounces was collected, but some was lost owing to his having his bowels moved by medicine. On the day following that forty-six ounces was recorded; and thereafter it seemed that good compensatory action had been established.

The chief points of interest in this case are the mode of injury, the possible fallacy

due to the disappearance of blood from the urine, and the otherwise mild character of the symptoms.

As regards the first of these, the boy was of opinion that he was thrown with his right side against a car. While he may be quite right as regards this, it is to be noted that there was no superficial mark of injury, and it is suggested that we have here an example of rupture by indirect violence—in fact, by sharp flexion of the trunk, crushing the kidney.

The disappearance of an immediately produced hematuria suggests three possibilities:

1. That the injury has been only slight.
2. That the ureter is blocked by clot.
3. That the ureter, with or without the vessels, is completely torn across.

In this case, the first of these was disposed of by the diminished amount of urine passed, the presence of a considerable tumor, and the febrile condition. As between the second and third, it seems that no opinion could be formed without the knowledge gained by operation, and that on this ground alone operation was called for, besides the reason which exists in the possibility of later infection and suppuration in and about the extravasated blood.

Such a case, with its circumscribed extravasation of blood, differs in important respects from those in which the blood escapes into the peritoneal cavity, and also from those in which, with or without primary invasion of the peritoneal cavity, the colon or the duodenum is involved. That this latter complication ever happens in indirect violence is not thought to be likely.

HYPODERMIC INJECTIONS OF CORROSIVE CHLORIDE IN THE TREATMENT OF SEPTIC FEVERS.

CACCIOPPOLI (*La Semaine Médicale*, No. 50, 1900), who has performed a number of successful experiments upon patients suffering from septic fever incident to persistently suppurating wounds by daily subcutaneous injections of about one-fifth of a grain of corrosive chloride, states that in one or two weeks the fever disappeared entirely, and that there was a great improvement in the general condition together with a marked tendency toward cicatrization of the lesions. In one case these chloride injections were begun before the febrile reaction was thoroughly established, and though the wound discharged fetid pus abundantly, there was absolutely no febrile reaction. Caccioppoli advises preliminary injections of sublimate before serious operations when suppuration is likely to result.

ON SOME DISAPPOINTMENTS OF SURGERY.

Under this title D'ARCY POWER (*The Lancet*, No. 4034, 1900) discusses minor unsatisfactory results of operations due to two causes—either promising too much on the part of the surgeon, or undue timidity. He bases his remarks upon his long experience, and begins with the operations of circumcision and for harelip, and he states there are few which give more disappointing results.

In regard to circumcision he notes that the cut surface of the prepuce contracts adhesions of the glans.

The recurrence of adenoids he deplores as due not so much to imperfect technique as to an active development of these growths. Hence he cautions against promising too much as a result of removal.

The greatest disappointments, the writer states, occur in connection with abdominal operations, particularly those carried out upon the kidney. He notes his failure to find stone in exploration when it is strongly suspected, and the difficulty experienced in anchoring a floating kidney; in one case the kidney became freed again, and a lumbar fistula formed. He states that in his experience he has had fistulæ form after excision of the spleen, after strangulated hernia, after the removal of the appendix, after ovariotomy, and after opening the gall-bladder. The fistulæ forming after complete healing of the wounds he attributes to infected silk ligatures, and therefore strongly advises that these be boiled.

Operations on the vermiform appendix offer so many disappointments that it is never wise to promise a patient or his friends too much beforehand. There comes, first, the immediate disappointment at the time of operation incident to the inability to remove the appendix. Twice he was unable to find this organ.

The mental disturbances following surgical operations sometimes form a remarkable series of disappointments. The author presents thirty-five cases which occurred in his practice, one so unusual that it is worth quoting. A woman thirty-five years old suffered with varicose veins. She was subjected to operation, many veins being ligatured, and

amongst others the internal saphenous vein high up in the thigh. The wounds had been closed, dressings had been applied, and the patient was ready to leave the operating theater, when the spica bandage was suddenly soaked with blood. The dressings were hastily removed, the wound in the groin reopened, and a large hole was found in the femoral vein. The vein was at once exposed and ligatures were passed round it above and below the rent. The vein was then divided, its walls being little thicker than a piece of tissue paper, and the wound was again closed. This patient became garrulous and semi-idiotic at the time of her recovery from the anesthetic. Macphail is quoted to the effect that in a total of 990 admissions into the insane asylum, there were forty cases of insanity occurring after surgical operations.

INTRACRANIAL EXTIRPATION OF THE GASSERIAN GANGLION WITHOUT LIGATURE OF THE MIDDLE MENINGEAL ARTERY.

DOLLINGER (*Medical Press*, No. 3215, 1900), impressed by a serious complication offered by the wounding of the middle meningeal artery in the operation and removal of the Gasserian ganglion, and noting that a number of skilful surgeons had been greatly troubled by this complication, examined one hundred skulls with the idea of discovering whether it were not possible to remove the ganglion without wounding this artery. He noted that in six of these skulls the median margin of the foramen spinosum lay in front of the hinder margin of the foramen ovale; in thirty-five it lay in the same plane as the hinder margin of the foramen ovale; in fifty-nine it lay behind the hinder margin of the foramen ovale. Moreover, the bony bridge which separates the foramen ovale from the foramen spinosum was wanting in five skulls. In these cases, therefore, the middle meningeal artery lies in the posterior external excavation of the foramen ovale, and in the same plane as it. Hence, it would seem that in fifty-nine per cent of cases the place of entrance of the middle meningeal artery lies so far behind the foramen ovale—*i.e.*, behind the place of exit of the three roots—that the ganglion can be approached without requiring the ligature and subsequent division of the artery. In thirty-five per cent of cases the ganglion may be removed without ligature of the artery if it is approached anteriorly, the second root leaving the skull further forward. In other words, in about ninety-six per cent of cases the Gasserian ganglion may be removed without previous ligature of the artery. The author has performed the operation five times in all. He opens the skull in the temporal region and bends back the flap formed of skin, muscle, and periosteum; the finger is then introduced between the dura and base of the skull until the middle meningeal artery is reached. Before this the dura mater is peeled off from the second and third divisions of the trigeminus by means of an elevator with a blunt point; this instrument being introduced from outward and medianward to upward and backward. The Gasserian ganglion is easily separated, partly from the base of the skull and partly from the dura; it is seized by forceps and dragged out together with the trigeminus root, the two divisions of the trigeminus above mentioned having been previously cut across. He lifts the brain with an elevator 1½ centimeters wide, and slightly bent on its flat side. This he holds in his left hand, operating by the aid of a light projected by an electric reflector. Thus performed, the first operation took twenty-nine minutes; the second twenty minutes. The average duration of the other three cases was thirty-eight minutes.

There are exceptional and rare cases in which during the whole operation only a few drops of blood may be lost. In some cases there is severe hemorrhage from the diploe. There is always more or less blood from the emissaries and the veins of the dura mater. But little attention need be paid to this. The assistant turns the patient's head slightly to one side with the hole downward so that the blood may escape from the base of the skull, while the operator projects a sufficient light into the skull, in a direction slightly downward, and isolates the ganglion as rapidly as possible. In six cases the author carried out the operation in this manner, and sharp bleeding from the sinus only occurred after the withdrawal of the ganglion from the sinus. In the first two cases, in order to arrest the bleeding from the sinus a small plug of iodoform gauze was placed between the skull base and the dura mater, leaving the end hanging from the wound, removing it after a few days. In the other four cases plugging was not attempted, but instead the brain was allowed to drop back to its place, and the skin flap was sutured. The bleeding probably stopped immediately, since the recovery of the patients was uninterrupted.

In one sclerotic subject, aged sixty-five, when the bone-flap was made severe bleeding occurred forthwith, and on separating the dufa mater from the base of the skull, such a profuse hemorrhage set in that it entirely obstructed the view. This could not be checked by plugging, and the operation had to be abandoned.

The author states that the prompt discovery of the external carotid artery is a maneuver with which every operator should be familiar.

THE CONDITION THREE YEARS AFTER OPERATION OF FIFTY SUCCESSFUL CONSECUTIVE OVARIOTOMIES.

MALCOLM (*The Lancet*, No. 4033, 1900) reports that three years after operation of ovariotomy he is able to state that thirty-two of fifty patients are in excellent health. Ten are more or less invalided, three are dead, and five have been lost sight of. Two of the fatal cases died from malignant trouble. The histories of many of these cases are reported in detail.

THE IMPORTANCE OF PRELIMINARY TREATMENT FOR INTRANASAL OPERATIONS.

SEILER (*Medical Record*, October, 1900) institutes preliminary treatment after a careful examination of the case has been made, and he feels satisfied that many if not all the concomitant symptoms can be traced directly or indirectly to the presence of abnormal and pathological conditions within the nasal cavities, and that a removal of these conditions is necessary for a cure of the ailment.

First of all, the patient should be directed as regards diet and hygienic measures. Such tonics as may be indicated for the purpose of toning up the system and counteracting any of the effects of general dyscrasias, if such are present, should be given. Among the hygienic measures, bathing of the neck and the upper portion of the chest and back with cold water or salt and water (one teaspoonful to one pint of water), morning and evening, followed by gentle drying of the skin with a soft Turkish towel, without friction, will be found very grateful and beneficial in those cases which are prone to acute congestion or inflammation of the mucous membrane of the upper air-passages. It regulates the capillary circulation and hardens the skin of the neck and throat so as to withstand the frequent shocks of changes of temperature about the region of the neck, such as are caused by draughts of cold air striking the skin.

The local treatment of the nasal and nasopharyngeal mucous membrane should begin with a thorough cleansing of the nasal cavities by the patient twice daily with a bland antiseptic solution of the proper density and temperature.

What may be called the natural method, or, as some patients have graphically described it, "drinking through the nose," will be found to be at once easily taught and easily learned by the patient, and to be efficient without being harmful. It consists in placing two ounces of the blood-warm solution in a small tumbler or cup, placing the end of the nose within the rim of the tilted vessel until the liquid enters the nostrils, then closing the mouth, and by a moderate inspiratory effort drawing the solution into the nose and nasopharynx, thus bringing it in contact with all parts of the nasal mucous membrane. The vessel should then be quickly removed from the nose and the liquid within the nasal cavities be blown out through both nostrils at once, and the process repeated until the liquid in the vessel is exhausted. If this cleansing process is faithfully carried out by the patient morning and evening, considerable advance toward the removal of congestion or inflammation will be observed. In the paroxysm of hay-fever or acute coryza the greatest possible relief is experienced by the patient in a very short time, provided, however, that the solution is of the proper density and is unirritating.

This cleansing process should be continued by the patient, while local applications of mild astringents and alteratives to the mucous membrane of the anterior and posterior nasal cavities are made by the surgeon at intervals of a day or two. All the numerous astringents in solution with the atomizer and in powder form as snuff have been used with more or less success, but the iodine solution in glycerin (iod. met. gr. viij, glycerin f ℥ ss, potass. iodid. gr. xxiv) has proved more universally useful than any other local remedy. It is best applied with a pledget of cotton on the end of a delicately armed applicator, which should be carried through the nostrils along the lower meatus into the nasopharynx on both sides if it is possible to do so, which manipulation should be executed as gently as possible.

Cocaine in any shape or strength of solution should never be used in the nasal cavities except as a local anesthetic for minor

intranasal operations, in which capacity it is invaluable. As its primary effect is a contraction of the capillaries of the nasal mucous membrane, its application, it is true, affords immediate but evanescent relief from the nasal obstruction due to turgescence of the blood-vessels and venous sinuses in the turbinated tissue; but after cocaine has lost its effect a reaction takes place which calls for a fresh dose of the drug, and the patient for the sake of temporary relief, as in hay-fever for instance, becomes addicted to the use of cocaine and cannot exist without a pledget of cotton saturated with cocaine solution in his nose. This habitual use of the drug has a relaxing effect upon the tissues, which become flaccid and pale; and any operation, no matter how trivial in its nature, undertaken when the nasal mucous membrane is in this condition, and is kept cocainized afterward, is apt to be followed by extremely slow repair. This effect of the drug, however, is a purely local one, and the effects of cocaine upon the general system are but rarely observed in these cases of "nasal cocaine fiends," probably because absorption of the drug does not take place through the anterior portion of the nasal mucous membrane.

This preliminary treatment, as outlined here, should be kept up for several weeks, the local applications being made, as stated, at frequent intervals, until a comparatively healthy appearing mucous membrane shows on examination.

TREATMENT OF HERNIA IN CHILDREN.

OCHSNER (*Journal of the American Medical Association*, vol. xxxv, No. 25) believes that too much stress has been laid on the importance of trusses in the treatment, and too little on removing the causes, of hernia in children.

It is far easier to retain a hernia, and thus encourage the closure of the hernial opening, by first relieving the abnormal intra-abdominal pressure and then applying the truss simply as an aid, than it would be to accomplish the same object by the use of the truss alone.

If it is at all possible, it is always best to place the child in bed in the inverted position and to reduce the intra-abdominal pressure before making use of a truss at all. Then, if it is not possible to maintain this position sufficiently long to obtain a cure, it is well to apply a perfectly fitting truss.

The fact of using a truss does not make the other precautions unnecessary. The child should still be cared for so as to remove abnormal intra-abdominal pressure from every cause, and the foot of its bed should still be elevated in order to make use of gravity in keeping the hernia empty and to facilitate the shortening of the mesentery.

His observations and a study of the available literature on this subject have led the writer to accept the following conclusions:

1. The development of hernia in children is favored by (*a*) faulty development of the abdominal wall; (*b*) insufficient strength in the tissues involved in closing the umbilical, inguinal, or femoral openings; (*c*) abnormal intra-abdominal pressure; (*d*) unclosed condition of the tunica vaginalis.

2. The causes *a* and *b* are likely to be inherited.

3. The abnormal intra-abdominal pressure is due (*a*) to gaseous distention resulting from improper feeding; (*b*) to the exertion necessary to accomplish defecation in case of chronic constipation; (*c*) to the same exertion necessary to evacuate the bladder on account of obstruction due to phimosis; (*d*) to severe, long-continued coughs.

4. A large majority of all cases of hernia in children will heal spontaneously if the increased intra-abdominal pressure is relieved, the hernial sac being kept empty.

5. This can be accomplished by means of trusses, or, much more rapidly, in inguinal and femoral hernia, by placing the child in bed with the foot of the bed elevated, the time required usually not exceeding six weeks.

6. Children with a tendency to the formation of hernia should be guarded against developing coughs.

7. Their diet should be given at regular times and chosen with a view to avoiding gaseous distention.

8. Constipation should be entirely prevented.

9. In case of boys, phimosis should be relieved if present.

10. Badly nourished and badly cared for children of the poor should be treated in hospitals, being placed in bed in the inverted position, the cause of increased intra-abdominal pressure being removed at the same time by proper treatment.

11. Operation is indicated (*a*) in strangulated hernia; (*b*) in irreducible hernia due to adhesions; (*c*) in case the opening is unusually large in a free hernia, especially if the condition is hereditary and the hernia cannot be

retained by means of a truss; (*d*) in reducible hydrocele.

12. Except in class *c*, the operation should consist simply in carefully dissecting out the sac, ligating it within the abdominal cavity, cutting away the sac and permitting the stump to retract within the abdominal cavity, and simply closing the wound in the skin.

13. The recumbent position, with the foot of the bed elevated, is of very great importance in the operative as well as in the non-operative treatment of hernia in children.

14. If the child cannot be kept in this position sufficiently long, a well-fitting truss should be worn night and day until there has been no protrusion for at least six months, at the same time the precautions being constantly taken to guard against intra-abdominal pressure from any cause.

RESECTION IN TUBERCULOUS DISEASE OF THE HIP.

KIRMISSON (*Rev. d'Orthop.*, No. 3, 1900; *British Medical Journal*, No. 2085, 1900), in reviewing a recent discussion at the Société de Chirurgie de Paris on the surgical treatment of hip-joint disease, states that he has been led to form a very unfavorable estimate of the utility of resection for such disease in young subjects. This operation, he states, is undoubtedly a serious one, is often followed by return of the disease, and its results from an orthopedic point of view are inferior to those of a strictly conservative treatment. Strong objection is raised against the frequent practice of making free incisions into cold abscesses associated with hip-joint disease and spinal caries. As soon as such an abscess is accessible the author treats it by simple puncture, and the injection of iodoform and ether. By such treatment practiced under strict aseptic precautions septic mischief, which so often occurs after free incision, may be avoided. Much stress is laid on the importance of rest in bed during the whole of the acute stage of hip-joint disease. This view, it is stated, is confirmed by the fact that there is now a general tendency in the surgical practice of the United States and other countries to discontinue the ambulatory method of treating coxalgia. This method, it is held, is likely to provoke corrosion of the articular surfaces, and thus to result in suppuration and deformity of the joint. The patient, Kirmisson asserts, should be kept at rest until the affected limb is quite free from pain.

CHOLELITHIASIS.

WÖLFLER (*Medicinisch-Chirurgisches Central-Blatt*, No. 49, 1900) in the course of a paper upon this subject notes the mortality of cholelithiasis operations performed by German surgeons as about five per cent, while the statistics of single operators show three per cent. In operations for stones lying in the common duct, the mortality is fifteen per cent. Bräum, in chronicling 216 cases, notes that the mortality was twenty-five per cent. As to internal treatment, Naunyn notes that of 150 cases treated medically for a short period, 4.6 per cent died, while forty per cent were cured. A marked contrast to this is the seventy-five per cent of radical cures following operative treatment. It is true that a sufficient number of cases have not yet been observed to determine how radically and completely operation cures. It is generally accepted, however, that when all the gall-stones are removed at the time of operation, a recurrence of symptoms is rare, Petersen noting but a single recurrence in seventy cases. Kehr, however, states that in about fifteen per cent of his cases there was a return of suffering. This may be due to adhesions, to hernia, or to narrowing of the common duct.

THE SURGERY OF CHRONIC ULCER OF THE STOMACH AND ITS SEQUELÆ.

MOYNIHAN (*British Medical Journal*, No. 2084, 1900) classifies as follows the various conditions resulting from chronic inflammatory processes in or near the stomach:

1. Temporary, intermittent narrowing of the pylorus, reflex in character, the result of muscular spasm. This condition is largely or entirely dependent upon chronic ulcer of some portion of the stomach.

2. Circumscribed or annular fibrous constriction at or near the pylorus.

3. Diffuse cicatricial induration at or near the pylorus or first portion of the duodenum.

4. Cicatricial contraction and induration with adhesions between pylorus, duodenum, abdominal wall, liver, gall-bladder, etc.

5. Cicatricial contraction and induration at the site of an ulcer situated in the body of the stomach, giving rise to the condition known as "hour-glass contraction."

6. Adhesions external to, and primarily independent of, the stomach and duodenum originating in inflammatory conditions of the gall-bladder, bile-ducts, etc., or rarely in traumatism (Krönkein).

The symptoms of stenosis are dependent upon the consecutive dilatation of the stomach; a dilated stomach being defined as one which is unable to evacuate its contents into the duodenum within the normal period of time. "Gastric stasis," as it is called, results, and food is retained in the stomach for two, three, or more days. So long as a stomach, even though deformed by rigid cicatrices or invaded by malignant growth, is able to empty itself in the normal limits of time, symptoms of moment are lacking.

A close examination of the history of patients suffering from fibrous stenosis of the pylorus will reveal in a certain, and probably not small, proportion of cases evidences of antecedent ulceration of the stomach. The period of intense or active ulceration is so well developed that it is referred to as an "attack" lasting some days or weeks. After this there is a period of quiescence. But at no long interval of time there are troubles which are grouped under the widely comprehensive term "indigestion." Grumbling discomfort or subacute pains are experienced two or more hours after food, and thereafter increase gradually in severity. Vomiting may occur, and the ejected material is seen to consist of ill-digested food, the taste of which is bitter and nasty. As the case becomes more chronic pain becomes less aggressive, but a sense of distention and of local anger after meals is commonly present. Vomiting occurs at increasingly long intervals. The stomach during, perhaps, many days gradually fills with food, which is there stagnant and undigested. When the limit of capacity is reached, there is an attack of vomiting—terrific, gushing, copious. In the ejecta, foods taken days before may be recognized unaltered, or the taste of them may be perceived by the patient. After this outburst there is quiet for a few days, when the stomach, again distended, is again emptied. Meanwhile the health of the patient suffers; he loses flesh, becomes sallow, pinched, and withered in appearance. Thirst is always present, and the mouth and tongue are dry, harsh, and hot.

The frequency and the severity of the pain depend not upon the dilatation of the stomach, but rather upon the activity of any ulcer which is present. An ulcer of the pylorus or duodenum which is embedded in a mass of cicatricial infiltration which it has produced probably heals with difficulty, and when healed is liable with trivial hurt to break down. There is no grievous pain unless ulceration or adhesions are present. A dilated stomach causes merely a passive and endurable sense of fulness, weight, heat, and increasing discomfort. If ulceration be present, there will probably be local tenderness in the epigastrium, pain in the lower dorsal region, and occasionally gastrorrhagia and melena.

When the symptoms of pyloric stenosis, apart from ulceration, are alone present, the patient is not long in recognizing that his bodily comfort and sense of well-being are dependent upon his maintaining a moderately empty stomach. Vomiting is therefore self-induced, or the aid of the stomach-tube is invoked. The relief experienced from lavage is very considerable, and is as a rule instantly appreciated; but after months of its employment, the unbroken and inevitable routine becomes often irksome and distressing.

In all cases of gastric dilatation, even the most passive, there are occasional outbursts of acute pain, more frequent vomiting and retching, and occasional hiccough. In general a distinct irritative cause for these inflammatory attacks can be remembered.

In the surgical treatment of the various cicatricial conditions found in and around the pylorus, any of the following operations may be found necessary:

1. Pyloroplasty, gastroplasty.
2. Gastroenterostomy.
3. Pylorectomy.
4. Gastrolysis.

Pyloroplasty, or the transverse division of the stricture and the stitching of the wound in a vertical direction, is an operation of limited applicability.

The cicatricial processes occurring in an ulcer situated at or in close proximity to the pylorus result in permanent stenosis, and contractions of widely variant form. In the first variety described above, the narrow annular or partially annular stricture, pyloroplasty is the simplest operation, and is attended by small risk and by great and lasting advantage. In cases of pyloric spasm it is theoretically more appropriate than any other operation. The incision dividing the stricture must be at least two inches in length, and may with advantage be more.

It has been said that the risk of subsequent contraction of the scar in pyloroplasty is an emphatic reason for the preference being given in all cases to gastroenterostomy. The recurrence of stenosis is due rather to fault in selection on the part of the operator than to any inherent malice in the method. Three

points in this connection deserve special attention in order to insure success.

1. The scar of the ulcer must be small in size, especially in width, and be sharply defined. There must be no cicatricial infiltration with the exception of the small sclerosed area, and the bowel walls must be soft and supple.

2. The incision dividing the stricture must be of adequate length, and must be continued on each side, well into healthy tissue.

3. There must be no peripyloric adhesions of any, even of the most trivial, kind.

In appropriately selected cases there can be no likelihood of recurrence.

Gastroenterostomy is an operation far more frequently called for than pyloroplasty. In the third and fourth above mentioned varieties of pyloric stenosis following ulcer, it is the method of choice, and as these forms are decidedly more frequent than all others, the operation must in consequence have a far larger scope.

The method of simple suture is the one Moynihan adopted in his last four cases, malignant and non-malignant. It is with practice possible to apply the suture without haste in from four to eight minutes, and greater speed than that is rarely necessary.

One unquestioned advantage gained by the use of mechanical appliances seems to be the security they give during the period when the operator is making himself adept in the technique of intestinal manipulations.

The operation is performed in the following manner:

The abdomen being opened by an incision about three-quarters of an inch to the right of the linea alba, the jejunum is sought for by passing the finger down to the left of the spine and feeling for the inferior duodenal fold. Immediately above and to the right of this is the duodenojejunal flexure, from which the jejunum can be traced. A loop of this bowel is then pulled out, emptied, and constricted by an elastic ligature. The stomach is pulled into the wound from above, and a long strip of gauze is packed all round the two viscera. A continuous silk suture is then applied for three inches, uniting the jejunum to the stomach along an oblique line, whose higher end is toward the cardiac orifice. The jejunum and stomach are then in turn laid open in the following manner: An incision 2 to 2½ inches long is made through the serous and submucous coats only; as they are divided they retract, and an ellipse of mucous membrane over half an inch wide in the center, and narrowing off at each end, points into the wound. Two pairs of nibbed forceps, one toward each end, grip and pull upon the ellipse of mucous membrane, which is then excised. A close continuous catgut suture then unites accurately the posterior edges of divided mucous membrane, and at one extremity is tied to a separately knotted suture, which is then carried round, uniting the anterior lips. Finally the serous membrane in front is united by a continuous silk suture. It is believed the removal of this ellipse of mucous membrane and the accurate suture of the edge are advantages in that they tend to prevent the closing of the anastomosis from swelling or pouting of the cut edge.

After the anastomosis is complete, apply two or three sutures to the proximal portion of the jejunum to fit it to the stomach at a higher level, and one or two to the distal portion near the greater curvature. To this disposition—which he adopts, whatever the method of suture—he attributes the absence of the regurgitation into the stomach of bowel contents, which has been so frequently remarked. It is important in applying the sutures to make sure that the opening in the jejunum is at that part most distant from the mesenteric attachment. There is a tendency to apply the side of the jejunum to the stomach, and thereby to invite the formation of a spur, to which has been attributed importance as a causative factor of regurgitation.

It has been frequently observed that regurgitation after the use of the Murphy button is most unusual, and the writer believes this is due to the fact that the intestinal half of the button must be introduced at the portion opposite to the mesentery.

There can now, Moynihan thinks, be no doubt that in all cases of gastroenterostomy, performed by whatever method, there is invariably and almost continuously some bile present in the stomach. The presence of bile and pancreatic juice in the stomach was formerly considered to be a matter of serious import, and even to be lethal. A case of his own, however, in which all the bile and all the pancreatic juice had, after suture of the duodenum at the duodenojejunal flexure, to pass into the stomach through the pylorus, and thence into the jejunum implanted in the anterior wall of the stomach, suffered no disability of even the most trivial kind. Bile and pancreatic juice in the stomach do not

affect in the least the health, comfort, or general well-being of the individual. The supposed advantages of posterior gastroenterostomy in preventing regurgitation of these fluids are therefore not worth considering. Moreover, Chrumskij, in reporting ten cases in which the parts were examined post-mortem after gastroenterostomy by suture, says that in not one of them was the opening found of sufficient size, and this he attributes to inaccurate suture of the mucous membrane. It is necessary therefore to make an opening which appears decidedly larger than is necessary. If this be done, and if the mucous membrane be removed in the manner described and accurately sutured, there will be no fear of undue contraction at any subsequent period.

The improvement in health and general condition of the patient after successful gastroenterostomy is most striking. Appetite returns, with the power of appeasing it. Food is taken with relish, pain is altogether lost, weight is gained, sometimes with amazing rapidity, and the patient experiences that *joie de vivre* which comes with a return to bodily health.

TREATMENT OF NOCTURNAL ENURESIS BY MASSAGE OF THE VESICAL NECK.

GERBSMAN (*La Semaine Médicale*, No. 50, 1900) treats nocturnal incontinence of urine by massage of the vesical neck practiced through the rectum. The patient is placed in the knee-chest position, and with the index finger stroking manipulations increasing in force are practiced for two minutes, followed by sudden intermittent pressures and vibrations.

Treatment is repeated every day, and the cure results, according to Gerbsman, after three to eight treatments.

HOUR-GLASS STOMACH AND PYLORIC STENOSIS TREATED BY GASTRO-ENTEROSTOMY.

MARTIN and POLLARD (*British Medical Journal*, No. 2084, 1900) report a case of hour-glass stomach in which, as they note, a gastroenterostomy was performed successfully, but was not followed by any improvement in the patient's condition, since the anastomosis was accomplished between the second compartment of the stomach and the intestine, and hence did not overcome the obstruction which was the main cause of difficulty, which lay in the stomach itself. The operation required a half-hour for its performance. The patient perished on the fifth day.

Reviews.

DISEASES OF THE NERVOUS SYSTEM. A Text-book for Students and Practitioners. By H. Oppenheim, M.D. Authorized Translation by E. E. Mayer, A.M., M.D. First American from the Second Revised and Enlarged German Edition. Freely Illustrated.
Philadelphia: The J. B. Lippincott Company, 1900.

The publication of this European classic by an American publisher should be hailed with pleasure by those physicians who are not sufficiently familiar with the German language to enable them to read the original text. Professor Oppenheim has so thoroughly placed his imprint upon modern neurology that anything that he may say in regard to diseases of the nervous system is certainly worthy of our careful attention. The work, while it is complete and conclusive, is not one of the more voluminous compilations upon nervous diseases, and so lends itself to the hand of the busy practitioner who wishes an accurate work of reference without having to read an exhaustive discourse upon each individual form of nervous disease. The translator's work is very well done, and we would not know that the book had been translated from the somewhat diffuse and verbose German text.

THERAPEUTICS: ITS PRINCIPLES AND PRACTICE. By Horatio C. Wood, M.D., LL.D. Eleventh Edition. Remodeled, and the Greater Part Rewritten, with the Assistance of Horatio C. Wood, Jr., M.D.
Philadelphia: The J. B. Lippincott Company, 1900.

It has been well said that Dr. Wood's book on Therapeutics occupies almost the position of a classic in medical literature; for without doubt the claim which he set forth in the preface to the first edition is correct, that no careful attempt to consider therapeutics in its relation to the physiological action of drugs had at that time been made. With the object of obtaining the services of younger blood Dr. Wood has associated his son with him, and the result has been quite a different plan in the arrangement of the text. The classification of drugs is practically unaltered; but at numerous places through the work — indeed, after the consideration of the physiological action of all important remedies—a summary of the author's belief in the physiological action of a given

remedy is printed in type considerably larger than that of the ordinary text, thereby overcoming the great difficulty which hitherto existed for students of this work, namely, that after having read an article they did not know what Dr. Wood really thought himself.

The book suffers in our opinion from a fault which is absolutely inseparable from all works in which drugs are classified according to their physiological action—namely, the necessity of including, under certain classes, drugs which physiologically possess certain influences for which they are never used in medicine. Thus, it certainly seems odd to find under "Antipyretics," thymol, benzoin, benzoic acid, and menthol; also to find that acetic acid or vinegar and tartaric acid are included under "Cardiac Depressants." In the article upon Ether we do not find any reference made to the papers and statistics collected by Dr. Weir of New York, or Deaver of Philadelphia; and in the article upon the Bromides, the statement is made that "it is essential in epilepsy and other chronic disorders to persist in the continuous administration of the bromides it may be for years." This we do not think is in accord with the opinion of most alienists who are in charge of large numbers of persons, to whom bromides are often given by an ordinary practitioner, and readers of the GAZETTE will remember that papers have appeared in our pages within the last two years which indicate that this belief on our part is correct.

On the other hand, a careful examination of the work from cover to cover shows that its authors have taken up a large amount of literature which has appeared since the last edition was published, that they have digested it thoroughly, and that they have successfully separated the useful from the useless.

The book stands to-day, as it has stood ever since it was first published, a standard work dealing with the physiological action and therapeutic application of drugs to the treatment of disease.

A COMPEND OF SKIN DISEASES. By Jay F. Schamberg, M.D. Revised and Enlarged.
Philadelphia: P. Blakiston's Son & Co., 1900.

Two years ago we referred in pleasant terms to this little manual of skin diseases, which seemed to us then to be most excellent. Since that time Dr. Schamberg has shown himself to be a capable investigator into skin diseases of various kinds, and has made contributions to medical literature which are creditable indeed. This is a compend, and therefore a compilation of much information found in other much larger works. The illustrations, in the majority of cases, seem to be original, and whenever they are original are unusually good. The work is filled with useful prescriptions, and as far as we have been able to observe is cordially to be commended, not only because it is good, but also because dermatology lends itself to condensation of this kind better perhaps than other specialties which have a wider range in medicine.

MEDICAL EXAMINATION FOR LIFE INSURANCE. By Charles Lyman Greene, M.D.
Philadelphia: P. Blakiston's Son & Co., 1900.

Dr. Greene has given us an octavo volume of over 400 pages in which the various conditions influencing risks in life insurance are carefully studied. The first chapter deals with the nature and growth of life insurance, and after this other chapters follow upon the medical examiner and his problems. Instructions in diagnosis, heredity, and occupation as influencing longevity are considered, and then follow other chapters with directions as to the methods to be employed in examining the thoracic organs, those of the abdominal cavity, and the kidneys. Finally, a most important chapter deals with the insurance of substandard lives. The closing chapters are devoted to attempts to defraud insurance companies and accident insurance companies. From this summary of the contents of Dr. Greene's work one can see that it includes most of the important facts with which the medical examiner has to deal. The illustrations, of which there are nearly one hundred, seem to us unusually good, and in many cases are original. Unlike many other books, this one is printed with annotations on the margin of each page, which gives one a key to the contents of the various paragraphs. The paper is excellent and the type clear and large. There are now many physicians all through the country who continually engage in the work of examining for life insurance, and to them we can most cordially commend this work.

THE CARE OF THE CONSUMPTIVE. By Charles Fox Gardiner, M.D.
New York and London: G. P. Putnam & Sons, 1900.

This is a small octavo volume of less than 200 pages dealing with the method and feeding of tubercular patients. It is evidently intended, from the character of its text, more for nurses and the patients themselves, or for the friends of patients, than for medical men,

and is dedicated to Dr. E. L. Trudeau, of Saranac, New York, whose work in the study of tuberculosis in the Adirondacks is so well known, and is so deserving of our highest regard. The little volume closes with a series of "Don'ts" which seem to us peculiarly well fitted to the class of patients for whom they are prepared.

A PRACTICAL TREATISE OF MATERIA MEDICA AND THERAPEUTICS. By John V. Shoemaker, M.D., LL.D. Fifth Edition. First Students' Edition.
Philadelphia: The F. A. Davis Co., 1900.

In the present volume the author and publishers have decided that it is best to make a radical change, and have divided this work on therapeutics into two parts, one which is to be known as a "Students' Edition," and the other, which is shortly to appear, as the "Physicians' Edition."

In the Students' Edition nothing is included beyond the description of those drugs and preparations which are official in the Pharmacopœias of the United States and Great Britain, together with some of their chemical modifications. In the Physicians' Edition we understand that the therapeutic application of drugs to the treatment of disease is to be more carefully considered. We will be interested to observe how successful this plan of discussing this subject will prove to be. It is manifestly advantageous to certain physicians not to have to buy information concerning facts with which they are already acquainted, and it is also manifestly advantageous to students not to have to dip too deeply into practical employment of drugs until they are required to do so by exigencies of practice. On the other hand, it seems to us that the study of therapeutics and materia medica is made much more interesting to the average student if he feels that he is learning something which can be directly applied to the treatment of cases which will come to his hands in the future.

We doubt not that the book will in any form, divided or undivided, remain as successful in its present edition as it has proved to be in the past, and we cordially wish it success.

ENTEROCLYSIS, HYPODERMOCLYSIS, AND INFUSION. A Manual for Physicians and Students. By Robert Coleman Kemp, M.D.
New York: James T. Dougherty, 1900.

Most of our readers know that Dr. Kemp has for a number of years devoted himself to making physiological experiments which have a direct bearing upon practical medicine. The results of these investigations have been published, most of them in medical journals, and he has now collected and placed them before us in the form of this small octavo of a little over 300 pages. The first portions of the work deal with certain experimental matters, and then with the employment of enteroclysis in the treatment of various infectious diseases. Other chapters deal with enemata and the various methods of washing out the bowel; then succeed others upon the various methods of infusion and the use of the carbonic acid bath in the treatment of cardiovascular diseases. The concluding chapter of the book deals with what he calls "therapeutic addenda," in which a large number of various subjects are treated, extending from the employment of contractile collodion in infiltration anesthesia to the use of antistreptococcic serum.

The book is a useful summary of the work done along the lines that we have named, and is not a text-book, but rather an essay embodying Dr. Kemp's views, most, if not all, of which are worthy of our high regard and esteem.

A TEXT-BOOK OF HISTOLOGY, INCLUDING MICROSCOPIC TECHNIQUE. By Dr. Philipp Stöhr. Third American from the Eighth German Edition. Translated by Dr. E. L. Billstein, and Edited with Additions by Dr. Alfred Schaper.
Philadelphia: P. Blakiston's Son & Co., 1900.

It is but eighteen months since we took pleasure in reviewing the first American edition of this very excellent work on histology, which in many respects seems to us one of the best, if not the best, which has yet been published. In the first place, the translation is very well done. In the second place, the illustrations are admirable, both in scope and in detail, and the type and paper is of such a character that the text is easily read and consequently easily utilized.

As the cost of the book is moderate and all its other qualifications are so excellent, we can commend it with cordiality to those of our readers who are anxious to obtain some work dealing with this subject.

REFRACTION AND HOW TO REFRACT. By James Thorington, A.M., M.D. Second Edition.
Philadelphia: P. Blakiston's Son & Co., 1900.

We note the appearance of the second edition of Dr. Thorington's useful little work within a year after the publication of the first edition with much pleasure. At the time of the appearance of the first edition we commended it highly, and we have been glad to note that other journals have done likewise,

some of the London journals having spoken of it in terms of high praise, and individual ophthalmologists having also stated personally and in reviews that it was an excellent book of its kind. It must be distinctly understood that it does not attempt to deal with the general conditions of the eye, but simply with those subjects which are naturally included under its title.

EXPERIMENTAL RESEARCH INTO THE SURGERY OF THE RESPIRATORY SYSTEM. By George W. Crile, A.M., M.D., Ph.D. Second Edition.
Philadelphia: J. B. Lippincott Company, 1900.

This is an experimental research to which was awarded the Nicholas Senn prize for 1898 by the American Medical Association. It has evidently been practically useful to the profession, since there has been a call for a second edition.

The first series of experiments were conducted for the purpose of determining the cause of the phenomena attending the inhaling of hot air and flame, the experimental evidence tending to show that the direct effects of flame inhaled into the lungs with the upper air-passages excluded are not such as cause sudden death. The next series of experiments were designed to determine the effect of filling the chest with fluid. The author concludes that a double hydrothorax rapidly induced is extremely fatal.

Among other interesting results attained in this study is to be noted the fact that no amount of injury inflicted upon the solar plexus, either directly or indirectly, is capable of causing any inhibitory action upon the heart. Blows delivered upon the lower chest, especially over the cardiac area, commonly cause collapse. The author notes in his studies of drowning and the cause of certain symptoms observed on entering an atmosphere of increased barometric pressure that a sufficient pressure increase in the intrapulmonary system may produce a collapse of the circulation greater than that produced by severing the superior or the inferior vena cava alone.

In the section devoted to the study of foreign bodies Crile shows that irritation, if applied to the middle of the upper portion of the larynx, would cause most profound reflex inhibitory phenomena. The only reflex phenomenon a foreign body below the larynx could produce is that of coughing; while in the larynx not only coughing may be produced upon slight irritation, but upon a greater irritation reflexed arrest of respiration will occur, and on a still greater irritation, in addition to the arrest of respiration there may be reflexed arrest to the heart's action, causing thereby a collapse more or less profound. The symptoms of asphyxia from obstruction need never be mistaken for those of reflex inhibition from the laryngeal area.

In the case of asphyxia from obstruction, the respiration, as well as the circulatory activity, will continue. The pulse will be strong, full, and slow, until finally, after five to eight minutes, there will be intermissions, then irregular actions, then intermissions, until finally the heart ceases in diastole. In reflex inhibition there is sudden collapse, with sudden cessation of respiratory action, and if the circulatory action is also affected, there will be an arrest of the heart as sudden as the arrest of the respiration.

The local application of cocaine upon the laryngeal mucosa, even with so weak a solution as one-half per cent, completely prevents the reflex inhibitory effect upon both the respiration and the heart, no matter to what extent the irritation of the larynx may be carried.

Crile contributes some interesting and useful observations upon laryngotomy, tracheotomy, and intubation.

A CLINICAL TREATISE ON FRACTURES. By William Barton Hopkins, M.D.
Philadelphia: J. B. Lippincott Company, 1900.

This work, admirable in both its subject-matter and its technical execution, is based on the author's enormous personal experience in the Pennsylvania Hospital. It is a noteworthy fact that it is devoted entirely to a practical consideration of fractures and their treatment, and that it puts forth with extreme brevity and clearness the methods which the author's ingenious mind and mechanical ability have combined to make the best. His treatment of fractures of the lower extremity of the humerus about the elbow is by means of an anterior right-angled splint; fractures of the shaft of the humerus require an internal right-angled splint supplemented by the use of a shoulder-cap; fractures of the upper extremity of the humerus imply a wedge-shaped pad in the axilla, base upward, supplemented by careful bandaging and collar-board shoulder-cap extending well down to the elbow; a broad handkerchief sling supports the forearm and hand. Hopkins states that for fractures of the clavicle, a dressing which will be found almost invariably applicable in meeting the various indications, if it is used with careful attention to

every detail, in subjects of both sexes and all ages, is the dressing of Desault, perhaps slightly modified. When this is to be applied there should first be a few days' confinement to bed, if practicable. This Desault dressing is applied in the following manner: A large pad in the axilla, best made of oakum, folded into a piece of Canton flannel or patent lint in the form of a wedge, can be perfectly retained in position by the application of the second roller of Desault. Having placed two layers of lint upon the injured shoulder, beneath the elbow, and in the sound axilla, the third roller is applied. The forearm will then be found to rest against the abdomen, and contact of skin surfaces is prevented by the insertion of one layer of lint. If the subject is fleshy, lint should be also placed in the fold at the bend of the elbow. A comfortable sling padded at the back of the neck and beneath the wrist supports the hand, with the forearm in a state of right-angled flexion. In applying the third roller the numerous turns across the injured shoulder should be made to intersect close enough to the root of the neck to press upon the inner fragment if possible; but a compress at this point is seldom necessary. Remembering that many yards of roller bandage are carried around the chest in the application of these two parts of Desault's dressing, and that each turn increases the aggregate constriction of the chest, too much tension should not be employed. In order to prevent any of the turns becoming disarranged, and also to lessen the tendency of the roller bandage to become slack, one-inch straps of rubber adhesive plaster two yards long should follow the turns of the third roller, and be also carried around the chest and upper and lower parts of the arm. By this dressing fixation as complete as by any other is perhaps obtained, and it may be further promoted by warning the patient to allow his injured shoulder and arm to hang as relaxed as possible; certain it is, that if he is ignorant of the harm he does, he may move his shoulder at will and disturb the fragments, no matter how securely they are retained by any dressing.

In fractures of the patella Hopkins prefers the open method of operation. The plan of non-operative treatment in common use he describes as follows: The limb, with the leg slightly elevated, is placed upon a straight posterior splint; a compress is applied above the upper fragment and secured to the splint in such a manner as to produce downward traction; a roller bandage retains the whole apparatus; and the limb is elevated on pillows on an inclined plane. If the posterior splint be a broad one, provided with cross-pieces, rotating-pins, or notched edges, these furnish points of attachment for the strips which draw the compress above the upper fragment downward.

It is with a feeling of pleasure and satisfaction that the practitioner will read this work. He will get from it what he hopes for but does not always succeed in getting from a consultant—*i.e.*, a personal judgment founded on skilled observation. He will not be confused by a mass of conflicting opinions, or at a loss to know exactly how to apply the treatment that Hopkins believes in and recommends. It is for this reason in part that the work is deserving of the warmest praise.

Correspondence.

LONDON LETTER.

By Raymond Crawfurd, M.A., M.D. Oxon., M.R.C.P. Lond.

A very interesting meeting of the Royal Medical and Chirurgical Society was devoted to a discussion of the parasitology, etiology, and prevention of malaria. In a previous letter I mentioned that the Colonial Office proposed to conduct some experiments on malarial infection in the Campagna, and that Drs. Sambon and Low had offered themselves for the purpose. These gentlemen communicated the outcome of their experiences to the society. In passing it is interesting to note that the association of the mosquito with malaria has been obscurely hinted at long prior to the discoveries of Ross; in East Africa the word "mbù" indicates both the fever and the gnat. This association has been abundantly confirmed by Manson's discovery that the mosquito is the intermediate host of the filaria.

The Campagna experiments were designed to prove the truth or error of the mosquito-malarial theory, and in order to discover how far the necessary protection might be compatible with the ordinary avocations of life. The test was of a twofold character, the first experiment being designed to afford a positive proof, and the second a proof by negative inference. In the first experiment it was arranged that a subject should allow himself to be bitten by mosquitoes reared and infected in a malarious district and then sent

home. The mosquitoes were sent to London, after having been satisfactorily infected from suitable cases in the S. Spirito Hospital; they were sent in gauze tubes enclosed in a square wooden box, with openings on the four lateral sides to allow of free ventilation. The gauze tubes were adopted to prevent as far as possible the bad effects of shaking; the idea was suggested by the observation that mosquitoes rested preferably on cobwebs and did not fly off when the cobwebs were shaken by the winds. On arrival Dr. Manson's son was bitten by these insects and developed the typical symptoms of double tertian ague. A second subject likewise underwent a severe attack of benign tertian fever. The infection of the mosquitoes had been obtained from a patient suffering from benign tertian fever. In the second test two men who had never suffered from malaria were to go into one of the regions known to be undoubtedly malarious and live there throughout the fever season, with no other protection than such as might prevent the bites of mosquitoes, for which purpose they were to be provided with a mosquito-proof hut. The original intention had been to erect the hut in the Cerveletta district of the Campagna, because of its nearness to Rome, but this was abandoned in favor of Ostia, which was pronounced by Italian experts as a far more deadly locality.

Altogether there were four inhabitants of the hut, which contained six rooms. The windows and all the crevices were protected by wire netting having meshes of seventeen millimeters. The windows were left wide open day and night, notwithstanding the forebodings of the neighbors. In spite of this the inhabitants remained in perfect health, so much so that the neighbors from sheer incredulity paid a surprise visit by night to satisfy their unbelief, and having come to scoff remained for advice and quinine. During all this period the population of the district suffered, as usual, severely and universally from malaria; indeed, of some fourteen or fifteen healthy police who were sent down into the district for a single night, all were suffering within a fortnight from an attack of fever. The experimenters found that they could go out freely into the Campagna during the daytime without any fear of being bitten, so that they discarded the original precautions of wearing veils, and not being abroad between one hour after sunrise and one hour before sunset.

The observations were carried on from July 19 to October 19, 1900. In July and August no mosquitoes were seen on the wing during the day, but in September and October, when there were several dull and cloudy days, a few occasionally appeared around the hut. Taken altogether, however, their times were very constant, the time of appearance being a few minutes after sunset, and that of disappearance soon after sunrise. Moreover, in houses in which during the daytime numbers of mosquitoes were to be found, they never attempted to bite the experimenters, who staid and captured them in test-tubes at their leisure. Most of them had evidently fed during the night on people or fowls, or dogs and cats, kept in the living rooms, and were gorged with blood. The only two species of Anopheles found in the district were *Anopheles Claviger* and *Anopheles pseudo-pictus. Anopheles Claviger* is by far the more common, and must be regarded as the chief agent in propagating the malarial fevers of the Campagna. In houses they always choose the darkest corners, and it was noticed that when settling on a striped fabric they seemed to prefer the darker stripes. Drs. Sambon and Low conclude that mosquitoes, and only mosquitoes, can transmit malarial fever, that protection from their bite implies absolute immunity, that the protection is easily obtained, and that such protection does not in any way interfere with the ordinary employments of life.

In this connection it may not be out of place to refer to the similar experiments recently made by Professor Grassi at Pæstum. His general conclusions were identical with those of Drs. Sambon and Low, and he further showed that by the use of veils and thick cotton gloves, those whose duties called them out-of-doors between sunset and sunrise could do so with almost complete security.

In an introductory address Dr. Manson pointed out that two things were still required to complete our knowledge of the entire life-history of the malarial parasite: first, what circumstances determine the distinction of the merozoïtes, and whether they proceed to the mosquito phase (the bisexual cycle) or to the human phase (the Golgi cycle); and secondly, what becomes of the parasite during the long latent period which sometimes elapses between exposure to infection and the development of attack. Also we have to explain why crescent forms are so frequent in this country, and in Italy in

late autumn, while they are rarely seen in tropical Africa, or in Italy during the summer or early autumn. Children are specially susceptible to malaria, as many as seventy to eighty per cent of native children contracting the disease under one year of age. The proportion infected becomes progressively smaller up to ten or twelve years, so that apparently among natives some degree of immunity is established. The post-mortem statistics of Hill and Daniels in Demerara confirm this. The former showed that the mortality from malaria was almost exclusively among children, while the latter found that in a large series of autopsies the presence of malarial pigment was at a maximum between two and five years, and in progressively diminishing amounts in each succeeding decade. Manson considers that there are four means available for the prophylaxis of malaria—to avoid natives, to take quinine, to destroy mosquitoes, and to protect from mosquitoes. The difficulty lies in the uniform practicability of these precautions.

Incidentally Dr. Manson alluded to blackwater fever and its relation to malarial fever. There is no ground for assigning blackwater fever to the use of quinine, as many suffer from the disease who have never taken quinine. Nor is it an intense malarial fever, as it is not always found in intensely malarial districts; nor is it a malarial cachexia, for it may occur within a few weeks of arrival in a malarial district. It has been suggested that blackwater fever may be due to a special form of malarial parasite, or to a malarial parasite the virulence of which has been increased by transmission through a particular species of mosquito; but at present these theories lack confirmation.

In a letter from Western Australia to the London *Lancet* Dr. Paget claims to have in the use of olive oil an infallible cure for typhoid fever. He administers an injection of olive oil per rectum every twelve or twenty-four hours; the quantity used for adults is a pint, to be retained if possible for twelve to twenty-four hours. If not returned it may be washed away with a soap and water enema, and replaced by a fresh injection after two or three hours. After a week or ten days the daily use of the injections can be discontinued, and they are given only when the temperature rises or the bowels are confined; he finds it the most effectual of all remedies for the diarrhea of typhoid patients. Occasional doses of calomel are given in addition when the bowels are confined; his only other medicine is a mixture of carbonate of ammonia and decoction of cinchona given every three or four hours. "Patients treated in the above manner in my opinion cannot die," writes Dr. Paget, who anticipates the question, "Were these cases of typhoid fever?" by the statement that Widal's reaction was uniformly found. It would be interesting if Dr. Paget would treat an equal number of typhoid patients under the same conditions without olive oil, to see whether there would be any increase of mortality. For the present, until some tenable theory of its mode of action is advanced, this line of treatment is unlikely to find favor among us.

Dr. Harris records a case of abscess of the liver diagnosed by the presence in the urine of crystals of cholesterine, leucine, and tyrosine. Very soon after the evacuation of the pus the leucine, tyrosine, and cholesterine crystals disappeared from the urine, and the urine became quite normal. It is not unusual, as Dr. Harris suggests, to find these crystals in the urine in acute morbid conditions of the liver, if they are sought for.

Dr. Calvert communicated to the Clinical Society notes of a case of hematoporphyrinuria not due to sulphonal. The patient, a woman, was suffering from recent hematemesis. This association is noteworthy, as Stokvis has argued that the hematoporphyrinuria occurring after sulphonal poisoning is due to the absorption of altered blood from hemorrhages produced by the drug in the mucous membrane of the stomach and intestines—a view which has not been confirmed by post-mortem observations. The blood counts in this case were of special interest, showing a steady increase of hemoglobin and red corpuscles from the original low value, though hematoporphyrin was simultaneously present in the urine. Dr. Garrod suggests that the excessive excretion of hematoporphyrin is due to a perversion of the process disposing of effete hemoglobin rather than to an unduly active hemolysis. This patient seemed to have had a similar attack a year previously, when there was no concurrence of either hematemesis or melena. The patient made a good recovery in the two instances, and throughout the case the hematoporphyrinuria did not appear to give any manifestations of its own. The color of the urine in these cases is not due to the hematoporphyrin itself, but to other associated pigments.